Medical
Pubs
12-29-44
V. 7, no 3 -12

# THE JOURNAL

OF THE

OKLAHOMA STATE MEDICAL ASSOCIATION

VOLUME XXVII McALESTER, OKLAHOMA, MARCH, 1934. NUMBER 3

## THE TREATMENT OF DIABETES MELLITUS AND ITS COMPLICATIONS*

SEALE HARRIS, M.D.
BIRMINGHAM, ALABAMA

Six years ago at the New Orleans Congress of the American College of Physicians and in a recent article, Allen[1] called attention to the increasing death rate from diabetes, even though with insulin and proper dieting deaths from uncomplicated diabetes should be of rare occurrence. Joslin[2] has also discussed the rising mortality rates from diabetes and has stressed the duty of physicians in its prevention. A recent study by Hoffman[3] shows that the death rate from diabetes continues to increase, "regardless of the insulin treatment and other advances in medicine."

Hoffman's statistics derived from a study of the diabetes mortality rate in 50 cities in the United States show that the diabetes death rate increased from 15.9 in 1912, to 24.6 in 1931, per 100,000 of population. The total number of deaths from diabetes in these 50 American cities, with a population of 21,244,714 in 1912, was 3,373; while in the same cities, with a total population of 30,987, 422 in 1931, the number of deaths was 7,610. The death rates from diabetes in the three largest American cities are inordinately high, i.e., Chicago 27.4, New York City 27.1 and Philadelphia 20.7 per 100,000 of population.

No death rates from diabetes in the rural districts have been published; but it is hoped that when the mortuary statistics of the 1930 census appears, valuable data regarding the distribution and death rates from diabetes in the various sections of the country may be available. It is believed that there are fewer cases of diabetes in proportion to population in the country than in the cities, but it may be assumed that the diabetes death rates in rural communities are relatively as high as in the cities.

Many causes for the increase in the death rates from diabetes have been suggested. An actual increase in diabetes is thought by some to account for the higher mortality rates from the disease; but probably the most important factor is that, with the feeling of safety which the use of insulin has engendered, diabetics have become more careless in following their diets. The diabetic death rate has not increased, but on the contrary deaths from uncomplicated diabetes have been practically eliminated, in hospitals where the treatment has been directed by clinicians like Joslin, Allen, Wilder, Woodyatt and many others; and even in the neglected cases, with coma and gangrene, in the hands of experienced diabetic clinicians deaths are exceedingly rare. Considering these facts one cannot escape the conclusion that an important factor in the increasing death rate from diabetes is the inadequate treatment of the disease by diet and the use of insulin. Allen[4], in discussing inadequate treatment in diabetes, goes to the heart of the problem when he says:

> "Since the present treatment, if correctly carried out, is theoretically capable of enabling nearly all diabetics to live out their natural lifetime, the failure to accomplish anything resembling this ideal must be attributed to two conditions: First, large numbers of physicians are evidently attempting to take advantage of the opportunity to use insulin for obtaining superficial and transitory benefits, without being qualified to maintain such control of the diabetes as will guard the patient against danger. Second, large numbers of patients are still too careless to follow treatment faithfully, even when they have been correctly advised by a physician."

### THE DUTY OF THE GENERAL PRACTITIONER TO HIS DIABETIC PATIENT

The treatment of diabetes is so simple that children of ten and twelve years of age learn to weigh and measure their food, calculate their own menu in grams and calories, analyze their urine and administer insulin to themselves when needed.

*Read by invitation before the Oklahoma State Medical Association, Oklahoma City, Oklahoma, May 18, 1933.

There is no excuse, therefore, for the genral practitioner, who must necessarily treat most cases of diabetes, not being able to direct the diabetic's diet and insulin therapy. But does the general practitioner who sees but one or two diabetics a year have the incentive to master the dietary management of the diabetes? If the physician is prepared to direct the treatment of diabetes, does he have the time, or can he have the time, to teach his diabetic patient the principles of nutrition and the use of insulin when necessary?

Judging from the statistics quoted by Hoffman it appears that even though there are medical centers in the large cities, and many clinicians in private practice who are adequately prepared to treat diabetes and whose death rates in diabetes must be very low—almost nil from uncomplicated diabetes — the average city general practitioner either does not treat diabetics properly, or there are many diabetics who have no treatment, or who do not follow the diets given them by physicians qualified to treat diabetes. The ignorant, the self indulgent and the poverty stricken diabetics usually are doomed to early death; and no doubt a considerable number of cases of diabetes belong to those classes, but there is no reason to think that there is more ignorance, perverseness and poverty in 1929, the year of our greatest prosperity, than in 1912. Certainly there is little hope of diminishing the death rates among those who cannot, or will not learn the simple principles of nutrition needed to control diabetes; but the well directed efforts of physicians, by impressing the diabetic with the necessity of his learning how to live and have diabetes, may save many who are now sacrificed on the altars of ignorance and self indulgence.

In the treatment of diabetes, as in every disease, only what is best for the patient should be considered; and the conscientious physician must decide for himself whether or not he is prepared to teach his trusting diabetic client how to calculate food values in grams, and calories, and whether or not he understands how to adjust the insulin dosage and diet to fit the patient's individual needs. The physician treating diabetes must give adequate time to educate the patient if he hopes to get results.

The best diabetic clinician is the best teacher, but " a little learning is a dangerous thing" for the diabetic and for the physician who treats the disease. As has been said before, there is no reason why any general practitioner should not become adequately prepared to treat diabetes, but if he is not, obviously it is his duty to refer his patient with diabetes to some one who has had the training and experience necessary to deal with such cases. The growing diabetic death rate is a reflection on the medical profession.

### THE ADVANTAGES OF A BRIEF PERIOD OF HOSPITALIZATION IN TREATING DIABETES

No one doubts but that the patient with tuberculosis stands the best chance to get well if he can have the educational advantages of even a short stay in a tuberculosis hospital; and so the diabetic will be more apt to learn how to manage his case if he can have hospital care under a clinician who has had a larger experience in teaching diabetics than the general practitioner who sees only an occasional case[5]. The tuberculosis hospital has played a considerable part in the reduction of the death rate of the "white plague," both by curing, or arresting the disease in the tuberculous patients; and each patient with tuberculosis who has had hospital treatment, goes home and teaches others how to prevent the disease. Likewise the death rate in diabetes may be lowered when physicians consider it their duty to send their diabetics for a stay in a hospital long enough to learn the simple principles of nutrition necessary to control diabetes.

The diabetic who has had hospitalization goes home and he teaches the other members of his family the dangers from over-eating, which no doubt is one of the most important causes of diabetes. The diabetic who knows diabetic arithmetic always takes delight in teaching other diabetics what he knows about diet and nutrition. While the diabetic should be taught that he can help other diabetics in working out their diets he should be shown that he is not prepared to treat diabetes except with the cooperation of a physician.

Allen[5] urges hospitalization in the treatment of diabetes for the following very good reasons:

"The most effective way of beginning diabetic treatment is by spending several weeks in a suitably equipped hospital or other institution. Even in cases where the sugar might be cleared up by home treatment, the results are far more thorough and lasting by the institutional method. This fact is easily understood by reason of the more complete study of

the case and especially the more efficient training of the patient possible in an institution. As every patient faces the necessity of taking care of his life, it is sufficiently important that he should be willing to devote a few short weeks to the best preparation for this task. The importance of this initial institutional care is still greater in cases treated with insulin than in those treated with diet alone."

Of course, there are many diabetics, particularly during the present depression who have not the money to go to hospitals for even a few days, though they can get ward rates, and many have not the money to pay physicians fees; and since the diabetic diet, which consists largely of vegetables, fruit, cream, and meats, is expensive many proverty stricken diabetics must suffer and some of them die. If the patient can procure enough money to pay for a few days in a hospital, and is not able to pay physicians' fees, the clinicians on the staffs of hospitals are always glad to give their services to indigent patients; and likewise the general practitioners are ready to treat any worthy diabetic who is not able to pay for his services. It is a difficult situation, however, for the indigent in the year 1933, and one would expect an increase in the diabetic death rate; but that may be offset by the fact that many diabetics cannot get the food to overeat and consequently there will be fewer deaths from the diabetic's "sins of commission."

While making investigations regarding food conditions in Germany after the signing of the armistice in 1918, I was informed by German physicians that the incidence of, and the death rates from diabetes, was greatly reduced in Germany after the first year of the World war when the allied blockade became so effective that the whole German population suffered for lack of food. Perhaps one of the compensations for the distressing times through which we are passing will be a decrease in diabetes because of the enforced temperance in eating by a large part of our population.

### THE TREATMENT OF UNCOMPLICATED DIABETES

In former articles, we have endeavored to simplify the treatment of diabetes so that it could be carried out by the general practitioner of limited experience with the disease; and we have been gratified to learn from physicians that they have managd their diabetics successfully by following the suggestions laid down in those articles.[1,2]

We have found from experience that it is practicable in beginning the treatment of the uncomplicated cases of diabetes in adults to use one diet with which to test the patient's carbohydrate tolerance. This diet consisting of 60 grams of carbohydrates, 60 grams of proteins and 60 grams of fats a day. This diet may be added to, until daily menus have been worked out which will provide sufficient food for the diabetic to eat to satiety, maintain his normal weight, and "carry on" with ease and efficiency the duties of his vocation.

Of course, it is best to treat diabetes scientifically, but since that is not always possible, we have followed the rule which was learned during ten years of general practice; i. e., that where the physician cannot do what is best for his patient, then do the next best thing, and above all things, apply common sense in the management of disease. If the diabetic must be treated at home, even if he is intelligent enough to learn food values, in beginning his treatment usually it is best not to confuse him by discussing grams and calories, but to prescribe a diet selected largely from food that is prepared for the rest of the family.

It is important in the very beginning of treatment to impress upon the patient that it is not difficult to prepare the food for a diabetic, nor is it a hardship to live on such a diet, because he can have plenty to eat of a variety of foods, and if he will adhere to his diet diabetes will not shorten his life or interfere with his usefulness or happiness. The fact is that the careful diabetic will live longer than other members of his family who have not been taught to live on a low carbohydrate, well balanced diet.

Some of the most brilliant results that we have seen in the treatment of diabetes have been among very poor patients who could scarcely read, or write, but who possessed what many educated people lack, i. e., common sense, and the will to do right. They were placed on diets, containing given quantities of simple foods expressed in household terms, which they carried out in their homes. They were not confused with trying to work with the metric system, and they were not given the fancy patented diabetic foods that are expensive and often misleading in their carbohydrate content. They were taught

simple and practical methods of how to live at home and have diabetes.

### COOPERATION OF PATIENT NECESSARY

If the diabetic is among the 30 or 40 per cent who will have to use insulin, he should be taught that it is even more necessary for him to adhere to his diet than if he had a mild case of diabetes. Above all things the diabetic should be made to realize the seriousness of his disease, and be impressed with the fact that if he is not willing to follow the diet prescribed by his physicians, and remain under his care, even after he has learned the arithmetic and chemistry of diabetes, he surely will suffer the consequences of his diabetic sins. The paths of the careless, self-satisfied and self-indulgent diabetics, who sometimes think they know more than their physicians, like "the paths of glory lead but to the grave." In order to secure the full cooperation of the diabetic while keeping him under observation until his optimal diet can be worked out it is necessary to explain to him that the only method of finding out the amount of food he can take and keep his urine sugar free is by trying out a test diet, increasing the food, and using insulin if necessary, until the diet suited to his particular nutritional needs has been determined.

One of the difficult problems with most diabetics is to convince them that they not only can live, but that they must live on less bread than they have been eating, because they believe that "bread is the staff of life." Paraphrasing an old aphorism, "what is one man's bread is another man's poison," makes good "food for thought" for the diabetic, because he can poison himself very easily by eating more bread than he can metabolize.

The diabetic's meat must be restricted. It should be explained to him that 58 per cent of protein is converted into sugar and metabolized as such in the body; and if he eats a large amount of meat his urine will soon be loaded with sugar. We have had many diabetics who had been living largely on meats and who were growing worse rapidly because they thought they could eat unlimited quantities of beef, pork, fish or fowl.

While cream and butter should play a large part in the diabetic's diet, whole milk or buttermilk should be used cautiously, because it must be remembered that about 5 per cent of milk is milk sugar. We have had many diabetics who have tried the "buttermilk treatment," sometimes with disastrous results. It is true that an occasional mild diabetic will clear his urine of sugar by drinking three glasses of buttermilk a day, but that is a starvation diet if long continued; but when the diabetic drinks all the buttermilk he wants the sugar returns in his urine. Diabetics, however, need milk; and enough to nourish them properly should be prescribed, even if insulin has to be used to metabolize the carbohydrate content of the milk.

It also should be remembered that the use of a high fat diet because of its cholestral content may lead to arteriosclerosis, the most frequent and the most dangerous sequel, or complication of diabetes. Formerly eggs were given *ad libitum* in diabetes. Now one egg a day is considered as sufficient in the diet of a diabetic. Because of their high cholestral content the excessive use of eggs in the diabetic's diet may lead to the early development of arteriosclerosis.

### THE DIABETIC'S INSANE DESIRE FOR SWEETS

Diabetics also must learn to forget the sweet taste; and for that reason, we agree with Joslin that it is best not to give them saccharin.

One of our diabetics, a lovely lady of fifty years of age, had no control over her appetite and was caught stealing food from other patients' trays. She defined diabetes as "an insane desire for food." Though every possible appeal was made to her to give up sweets, including the effort to frighten her by telling her of the certain death that would come to her if she persisted in her folly, she would sometimes eat a pound of candy at a time. We sent this patient home because we could not control her about eating. We next heard of her being treated (?) by a chiropractor, who advertised in the newspapers that he could "cure diabetes without dieting the patient." It is needless to add that in a few weeks she had "dug her grave with her sweet tooth."

The opinion that diabetics may eat honey seems to be wide-spread among laymen, and we have had many diabetics who had been satisfying their longing for sweets by eating honey. It is true that honey is more wholesome for the normal person, than white sugar, but honey has a very high carbohydrate content and there-

fore is just as bad for the diabetic as any other form of sweet.

Coffee and tea should be eliminated from the diabetic's diet for several reasons, the most important being that they contain a habit forming drug, caffeine, which is a diuretic and the diabetic's kidneys do not need a stimulant. Besides there are few diabetics who will not slip one or two teaspoonsful of sugar in their coffee or tea.

### TRIAL DIETS

In the effort to simplify the treatment of diabetes for the general practitioner we have prepared a series of diets estimating the quantities of foods in household measures and in grams and calories.* If the patient cannot go to the hospital and the treatment must be undertaken at home, he is given the prescribed diet expressed in household measures for one or two days. As soon as he can buy gram scales and has learned how to use them his diet is prescribed in grams with the menus worked out for him. Then he is taught how to calculate food values and to prepare his own menus from foods available in his home. If the diabetic is in a hospital the dietitian can aid very materially in teaching him the simple diabetic arithmetic needed to calculate his daily menus in grams and calories. If the diabetic is to be treated at home the physician should arrange to give him daily lessons of from one-half to one hour each until his pupil patient has learned what he needs to know in order to calculate his own menus, analyze his own urine, and use insulin if necessary. In the meantime the physician can adjust the diabetic's diet, and insulin dosage if necessary, to fit his individual needs.

Treatment is begun with the trial diet number one (60 Ch. 60 P. 60 F.), if the adult patient has uncomplicated diabetes, and he has no diacetic acid in his urine. On this diet the mild diabetic usually will be sugar free in one or two days, when the diet is increased to trial diet number two (90 Ch. 60 P. and 90 F.). If in another one or two days his urine is sugar free the third trial diet (120 Ch. 60 P. and 120 F.) is given; and if in one or two days his urine continues sugar free trial diet number four (135 Ch. 60 P. and 120 F.) is given. If in another twenty-four hours he is sugar free his carbohydrates are increased to 200 grams and his fats continued reduced to 90 grams while his protein daily ration is kept at about 1 gram per kilo of body weight. This will give about 2000 calories, which is about the maintenance or optimal diet for the average adult diabetic.

Some clinicians prefer to start with the maintenance diet and increase the insulin from day to day until the urine becomes sugar free and the blood sugar becomes normal; but in our experience most patients do not want to use insulin and if the diabetic's urine becomes sugar free on one or two days he is encouraged and becomes more cooperative. If with the increase in diet sugar reappears in his urine the diabetic is shown that insulin is necessary if he would have enough food to be comfortable. He then usually offers no objection to using insulin.

*I am indebted to Miss Bertha Sexton, Dietitian, Birmingham Baptist Hospital, for her aid in preparing and calculating the food values in the menus published in this paper.

## TRIAL DIET NO. I

**60 grams carbohydrate, 60 grams protein, 60 grams fat.**

| AMOUNT | | | FOOD | FOOD VALUE | | | |
|---|---|---|---|---|---|---|---|
| Gms. | Oz. | Tablespoons | BREAKFAST | Ch. | Prot. | Fat | Cals. |
| 100 | 3½ | | Grapefruit 100 grams or ½ orange, 1 medium (50 grams) peach or ½ pear or other 10 per cent fruit | 6 | 0 | 0 | 24 |
| 50 | 2 | 3 | Oatmeal, cooked, or any dry cereals (20 grams) | 6 | 2 | 0 | 32 |
| 30 | 1 | 2 | Cream, 20 per cent | 1 | 1 | 6 | 62 |
| | | 1 | Egg | 0 | 6 | 6 | 78 |
| 10 | | 2 strips | Bacon | 0 | 2 | 7 | 71 |
| 150 | 5 | 1 glass | Skimmed milk or buttermilk | 6 | 6 | 2 | 66 |
| | | | | 19 | 17 | 21 | 333 |
| | | | DINNER | | | | |
| 100 | 3½ | 7 | Soup, 1 bowl chicken, or beef broth, or bouillon, or strained vegetable soup | 0 | 0 | 0 | |
| 50 | 2 | 2x4x1" | Meat as steak 50 gms., or lamb 55 gms., or pork or | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | fish 60 gms., or 60 gms. chicken or game | 0 | 12 | 10 | 138 |
| 100 | 3⅓ | 5 | 5 per cent vegetables as turnip greens; or spinach; or cabbage; or cauliflower; or string beans; asparagus tips, or other 5 per cent vegetables | 6 | 1 | 0 | 28 |
| 10 | | 1 thin slice | Whole wheat toast, or 10 grams white bread, or 10 grams corn bread, or 10 grams crackers | 5 | 0 | 0 | 20 |
| 100 | 3⅓ | 1 glass | Milk | 5 | 3 | 4 | 68 |
| 10 | ½ | 1 pat | Butter | 0 | 0 | 6 | 54 |
| 50 | 2 | 1 | Dessert: 50 gms. baked apple, or 75 gms. peaches, or 50 gms. pears, or 75 gms. strawberries, or 50 gms. orange or 70 gms. grapefruit | 6 | 1 | 0 | 28 |
| | | | | 22 | 17 | 20 | 336 |
| | | | **SUPPER** | | | | |
| 100 | 3⅓ | 7 | Soup, 1 bowl as broth, bouillon, or strained vegetable soup | 0 | 0 | 0 | |
| 50 | 2 | 2x4x1" | Meat substitute—American cheese or 50 gms. Swiss cheese or 50 gms. cottage cheese | 1 | 12 | 15 | 183 |
| 50 | 2 | 3 | Lima beans, 25 gms. English peas, 25 gms, navy beans | 5 | 2 | 0 | 48 |
| 100 | 3⅓ | Med. serv. | 5 per cent vegetables, 1 small tomato, ½ head lettuce, or 100 gms. (5 tablespoonsful) cabbage, cole slaw (100 gms.), or radishes or any 5 per cent vegetable | 3 | 1 | 0 | 16 |
| 100 | 3⅓ | 1 glass | Buttermilk | 4 | 4 | 1 | 41 |
| 50 | 2 | Small serv. | Fruit as 25 gms baked apple, 50 gms. grapefruit, 25 gms. orange, 50 gms. blackberries, 25 gms. raspberries, or any other fruit | 4 | 0 | 0 | 16 |
| 10 | | | Crackers | 5 | 0 | 0 | |
| 6 | | | Butter | 0 | 0 | 4 | |
| | | | | 22 | 19 | 20 | 304 |
| | | | Actual food intake for the 24 hours | 63 | 53 | 61 | 973 |

## TRIAL DIET NO. II

**90 grams carbohydrate, 60 grams protein, 90 grams fat.**

| AMOUNT | | | FOOD | FOOD VALUE | | | |
|---|---|---|---|---|---|---|---|
| Gms. | Oz. | Tablespoons | BREAKFAST | Ch. | Prot. | Fat | Cals. |
| 100 | 3 | | Grapefruit, 80 gms., 1 medium orange (50 gms.) ½ small apple (50 gms.) or other 10 per cent fruit | 6 | 0 | 0 | 24 |
| 50 | 2 | 3 | Oatmeal; or 20 grams dry cereal | 6 | 2 | 0 | 32 |
| 30 | | 2 | Cream—20 per cent | 1 | 1 | 6 | 62 |
| | | 1 | Egg | 0 | 6 | 6 | 78 |
| 10 | | 2 strips | Bacon | 0 | 2 | 7 | 71 |
| 150 | 5 | 1 glass | Skimmed milk or buttermilk | 6 | 6 | 2 | 66 |
| 20 | | 1 slice | Whole wheat toast or 20 grams white bread | 10 | 2 | 0 | 48 |
| 10 | ¼ | 1 pat | Butter | 0 | 0 | 9 | 81 |
| | | | | 29 | 19 | 30 | 462 |
| | | | **DINNER** | | | | |
| 100 | 3⅓ | 7 | Soup, 1 bowl, as broth or strained vegetable soup or bouillon | 0 | 0 | 0 | |
| 50 | | 2x4x1" | Meat as 50 gms. steak, 55 gms. lamb, 60 gms. pork, 60 gms. fish, 55 gms. chicken | 0 | 12 | 10 | 138 |
| 20 | ⅔ | 2 pats | Butter | 0 | 0 | 16 | 144 |
| 100 | 3⅓ | 5 | 5 per cent vegetables as turnip greens, or spinach, or cabbage, or cauliflower, or string beans, or asparagus tips, or any 5 per cent vegetable | 6 | 1 | 0 | 28 |
| 50 | 2 | 5 | Carrots, squash, or English peas, or beets, or turnips or any 10 per cent vegetable | 6 | 2 | 0 | 32 |
| 15 | | ½ slice | Whole wheat toast, or 15 gms. crackers or 15 gms. white bread | 7 | 0 | 0 | 28 |
| 150 | 5 | 1 glass | Skimmed milk or buttermilk | 6 | 6 | 2 | 72 |
| 50 | 3⅓ | Med. serv. | Dessert as 50 gms. baked apple, or 75 gms. peaches, or 75 gms. strawberries, or 50 gms. orange or 90 gms. grapefruit | 6 | 1 | 0 | 28 |
| | | | | 31 | 22 | 28 | 470 |

**SUPPER**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 100 | 3⅓ | 7 | Soup, 1 bowl, as clear broth, bouillon, strained vegetable soup | 0 | 0 | 0 | |
| 50 | 2 | 2x4x1" | Meat substitute as 40 gms. American cheese, or Swiss cheese, or 50 gms. cottage cheese | 0 | 12 | 12 | 138 |
| 100 | 3⅓ | 5 | Vegetables as 40 gms. lima beans, 100 gms. English peas, 50 gms. Navy beans, 100 gms parsnips | 10 | 2 | 0 | 48 |
| 100 | 3⅓ | | 5 per cent vegetables, 1 medium tomato, ½ head lettuce, cabbage, (cole slaw) 100 gms. radish 100 gms. or any 5 per cent vegetable | 3 | 1 | 0 | 16 |
| 20 | | 1 slice | Whole wheat toast, or 20 gms. white bread | 10 | 2 | 0 | 48 |
| 150 | 5 | 1 glass | Buttermilk | 4 | 4 | 1 | 41 |
| 20 | | 2 pats | Butter | 0 | 0 | 17 | 153 |
| 50 | 2 | | Fruit as 25 gms. baked apple, 50 gms. grapefruit, 25 gms. orange. 50 gms blackberries, 25 gms, raspberries or any other fruit | 3 | 0 | 0 | 12 |
| | | | | 30 | 21 | 30 | 471 |
| | | | Actual food intake for the 24 hours | 89 | 60 | 90 | 1403 |

## TRIAL DIET NO. III

**120 grams carbohydrate. 60 grams protein, 120 grams fat.**

| AMOUNT | | | FOOD | FOOD VALUE | | | |
|---|---|---|---|---|---|---|---|
| Gms. | Oz. | Tablespoons | BREAKFAST | Ch. | Prot. | Fat | Cals. |
| 100 | 2 | | Grapefruit, 1 medium orange (60 gms.) 1 small apple (70 gms.) | 8 | 1 | 0 | 36 |
| 100 | 3⅓ | 6 | Oatmeal | 12 | 1 | 0 | 52 |
| 50 | 2½ | 5 | Cream—20 per cent | 2 | 2 | 11 | 115 |
| | | 1 | Egg | 0 | 6 | 6 | 78 |
| 10 | | 2 strips | Bacon | 0 | 2 | 7 | 71 |
| 150 | 5 | 1 glass | Milk (Sweet) | 8 | 4 | 6 | 102 |
| 10 | | | Butter | 0 | 0 | 9 | 81 |
| 20 | | 1 slice | Toast, whole wheat or white bread | 10 | 2 | 0 | 48 |
| | | | | 40 | 18 | 39 | 583 |
| | | | **DINNER** | | | | |
| 100 | 3⅓ | 7 | Soup—1 bowl clear broth, or strained vegetable soup, or bouillon | 0 | 0 | 0 | |
| 50 | | 2x4x1" | Meat as 50 gms. steak, 55 gms. lamb, 60 gms. pork, 60 gms. fish, 55 gms. chicken | 0 | 12 | 10 | 138 |
| 100 | 3⅓ | 5 | 5 per cent vegetables as turnip greens, spinach, cabbage, cauliflower, string beans, asparagus, or any 5 per cent vegetables | 6 | 1 | 0 | 28 |
| 50 | 3⅓ | 5 | 10 per cent vegetables as carrots, squash, English peas, beets, turnips, butter beans, or any 10 per cent vegetables | 6 | 2 | 0 | 32 |
| 20 | | 1 slice | Whole wheat toast | 10 | 2 | 0 | 48 |
| 150 | 5 | 1 glass | Milk (Sweet) | 8 | 4 | 6 | 102 |
| 30 | | 3 pats | Butter | 0 | 0 | 25 | 225 |
| 50 | | | Dessert, as 50 gms. apple, 100 gms. peaches, 80 gms. pears, 100 gms. strawberries, 70 gms. orange, 125 gms. grapefruit | 9 | 1 | 0 | 40 |
| | | | | 39 | 22 | 41 | 613 |
| | | | **SUPPER** | | | | |
| 100 | 3⅓ | 7 | Soup, as clear broth, bouillon, or strained vegetable soup | 0 | 0 | 0 | |
| 50 | 2 | 2x4x1" | Meat substitute, American cheese, or Swiss cheese, 50 gms. Cottage cheese, 50 gms. any other cheese | 0 | 12 | 12 | 156 |
| 100 | 3⅓ | 5 | Lima beans, 50 gms. English peas, 100 gms. Navy beans, 50 gms. parsnips, 100 gms, or any 20 per cent vegetables | 10 | 2 | 0 | 48 |
| 100 | | | 3 to 5 per cent vegetables as tomatoes, ½ head lettuce, cabbage, (cole slaw) 100 gms., radishes 100 gms., celery or any 5 per cent vegetable | 3 | 1 | 0 | 16 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | | | Mayonnaise, 1 teaspoonful | 0 | 0 | 15 | 135 |
| 20 | | 1 slice | Whole wheat toast | 10 | 2 | 0 | 48 |
| 150 | 5 | 1 glass | Milk (Sweet) | 8 | 4 | 6 | 102 |
| 8 | | 1 pat | Butter | 0 | 0 | 6 | 54 |
| 70 | | | Dessert: As 70 gms. apple, 100 gms. peaches, 80 gms. orange, 125 gms. grapefruit, 35 gms. raspberries, 70 gms. blackberries | 9 | 1 | 0 | 40 |
| | | | | 40 | 22 | 39 | 599 |
| | | | Actual food intake for the 24 hours | 119 | 62 | 119 | 1795 |

## TRIAL DIET NO. IV

**135 grams carbohydrate, 60 grams protein, 120 grams fat.**

| AMOUNT | | | FOOD | FOOD VALUE | | | |
|---|---|---|---|---|---|---|---|
| Gms. | Oz. | Tablespoons | BREAKFAST | Ch. | Prot. | Fat | Cals. |
| 100 | 3½ | | 1 medium size orange, 1 medium size apple, or 50 gms. banana | 12 | 1 | 0 | 52 |
| 100 | 3⅓ | 6 | Oatmeal | 12 | 3 | 0 | 42 |
| 60 | 2 | 4 | Cream—20 per cent | 2 | 2 | 11 | 115 |
| | | 1 | Egg | 0 | 6 | 6 | 78 |
| 10 | | 2 strips | Bacon | 0 | 2 | 7 | 71 |
| 150 | 5 | 1 glass | Milk (Sweet) | 8 | 4 | 6 | 102 |
| 10 | | 1 pat | Butter | 0 | 0 | 9 | 81 |
| 20 | | 1 slice | Whole wheat toast or white bread | 10 | 2 | 0 | 48 |
| | | | | 44 | 20 | 39 | 589 |
| | | | DINNER | | | | |
| 100 | 3⅓ | | Soup, 1 bowl of clear broth, or strained vegetable soup, or bouillon | 0 | 0 | 0 | |
| 50 | | 2x4x1" | Meat as 50 gms. steak, 50 gms. lamb, 60 gms. pork, 60 gms. fish, 55 gms. chicken | 0 | 12 | 10 | 162 |
| 100 | 3⅓ | 5 | 5 per cent vegetables as turnip greens, spinach, cabbage, cauliflower, string beans. asparagus, or any 5 per cent vegetables | 6 | 1 | 0 | 28 |
| 50 | 3⅓ | 5 | 10 per cent vegetables, carrots, squash, English peas, beets, turnips, butterbeans or any 10 per cent vegetables | 6 | 2 | 0 | 32 |
| 10 | | 1 slice | Whole wheat toast | 10 | 0 | 0 | 20 |
| 150 | 5 | 1 glass | Milk (Sweet) | 8 | 4 | 6 | 102 |
| 30 | | 3 pats | Butter | 0 | 0 | 25 | 225 |
| 100 | | | Dessert: Large serving pears, 100 gms., strawberries, 200 gms., apples, 100 gms., or peaches 125 gms., 1½ orange, 100 gms., or 1 medium grapefruit | 12 | 1 | 0 | 52 |
| | | | | 42 | 20 | 41 | 621 |
| | | | SUPPER | | | | |
| 100 | 3⅓ | | Soup as clear broth, bouillon, or strained vegetable soup | 0 | 0 | 0 | |
| 50 | | 2x4x1" | Meat substitute as American cheese, or 50 gms. Swiss cheese, 50 gms. Cottage cheese, 50 gms. Dutch, 50 gms. Limberger or any other cheese | 0 | 12 | 12 | 183 |
| 100 | 3⅓ | 5 | Vegetables as 50 gms lima beans, 100 gms. English peas, 50 gms. Navy beans, or other lentil | 10 | 2 | 0 | 48 |
| 100 | | | 5 per cent vegetables as 1 medium tomato, ½ head lettuce, cabbage (cole slaw), 100 gms, radishes, 100 gms., celery or any 5 per cent vegetable | 3 | 1 | 0 | 16 |
| 15 | | | Mayonnaise | 0 | 0 | 15 | 135 |
| 25 | | 1 slice | Whole wheat toast | 12 | 2 | 0 | 56 |
| 150 | 5 | 1 glass | Sweet milk | 8 | 4 | 6 | 102 |
| | | 1 pat | Butter | 0 | 0 | 6 | 54 |
| 100 | | | Dessert: Pear, 100 gms., strawberries, 200 gms., apple 100 gms., or peach, 125 gms., or orange (100 gms.) | 12 | 1 | 0 | 52 |
| | | | | 45 | 22 | 39 | 646 |
| | | | Actual food intake for the 24 hours | 131 | 62 | 119 | 1856 |

*Reducing the Fat Diabetic.* If the diabetic is overweight and does not lose on the trial optimal diet, the cream and butter should be reduced, or omitted altogether, until he is losing from two to four pounds per week. He is kept on this diet until he has been reduced to about ten pounds below his normal weight, and then the cream and butter are added until the diet is found upon which the patient can hold his weight to about ten pounds below his standard weight.

*The Underweight Diabetic.* If the underweight diabetic's urine remains sugar free on the trial diet plus two or three raises and he is not gaining one or two pounds a week, two to four teaspoonsful of cream and an extra pat of butter are added to each meal until the patient gains up to within ten pounds of his normal weight.

Of course, the urine of the patient on a high fat diet is watched for the presence of diacetic acid and if that occurs the cream and butter are reduced; or the patient is given a slice of bread and enough insulin to keep his urine sugar free. It should be remembered that "fats burn in the fire of the carbohydrates" and sufficient starches, or fruit sugars are necessary for the complete metabolism of fats.

*Instruction for the Educated, Intelligent Diabetic.* If the patient can buy the gram scales and is sufficiently intelligent to apply the metric system in weighing and measuring his food, he may be treated at home, provided his physician has had the opportunity of learning diabetic arithmetic and he understands fully how to adjust the insulin dosage. The diabetic manuals by Joslin, John or Duffie may be used with advantage in teaching the intelligent diabetic how to live at home.

The greatest joy that can come to a clinician who treats diabetes is to deal with an intelligent diabetic who can learn the simple principles of nutrition, and who possesses the self control required to live within his carbohydrate limitations. The clinician can promise such a person that he can control his diabetes almost as certainly as two and two make four. Indeed, in no other disease within the whole realm of medicine has the treatment been placed on such an accurate scientific basis.

In treating diabetes the physician must become the serious and interested instructor who can take the time to teach the diabetic the general principles of nutrition, with particular reference to making menus containing the amounts of carbohydrates, proteins and fats needed in his particular case. Nevertheless, the diabetic should be made to understand that while he can learn to diet himself, use insulin and examine his urine for sugar and diacetic acid, he is not qualified to treat himself, or anyone else with diabetes. The old French aphorism, "The doctor who treats himself has a fool for a doctor and a fool for a patient," is particularly applicable to the diabetic who thinks that he can dispense with the services of his physician. He has the "little knowledge that is a dangerous thing," and he should understand that while he is not sick in bed, he needs the care of a physician to keep him well, and he should report to his physician as often as may be necessary to prevent the complications of diabetes.

### EXAMINING THE URINE AT HOME

One of the first lessons that the diabetic should learn, whether he is treated at home or in a hospital, is how to examine his own urine for sugar and diacetic acid. One or two test tubes, a few ounces of Benedict's qualitative solution, a small bottle of ferric chloride, and a medicine dropper will not cost the patient over a dollar; and that is all he needs to keep informed as to whether or not he is eating too much glucose-forming food, and also as to whether or not he is metabolizing his fats.

To test the urine for sugar add eight drops of urine to a teaspoonful and a half of the Benedict's solution in a test tube, shake and boil over an alcohol lamp, or Bunson gas burner, or in a cupful of boiling water on the kitchen stove, and let it simmer for five minutes. If a heavy greenish precipitate forms it means a trace of sugar, if a yellowish sediment is found a moderate amount of sugar is present, and if the precipitate is red it shows that the urine is heavy with sugar.

For several weeks after beginning the treatment the patient or some member of his family should examine two or three specimens a day until he learns the diet he can follow and keep his urine sugar free; and he should examine his urine frequently as long as he lives. If the diabetic is tempted to eat sweets, or too much bread or other starchy foods, or if he eats too much meat; then when he examines his urine and finds it loaded with sugar, he

will not be so apt to disregard his instructions and repeat his indiscretion in eating.

*Test for Diacetic Acid.* The test for diacetic acid is quite simple. To about two teaspoonsful of fresh urine add six drops of liquor ferric chloridi, U. S. P. If the urine turns reddish a small amount of diacetic acid is present; but if it turns a deep Burgundy red, it shows a tendency to acidosis, an indication for the diabetic to reduce his fats, or cut them out altogether, until there is no diacetic acid in his urine. It is better, however, to teach the diabetic to send for, or report to his doctor when he finds the heavy red color on adding the iron to his urine. The diabetic should know that if he takes aspirin the ferric chloride test for diacetic acid will be positive. The ferric chloride test need not be used by the patient unless there is sugar in his urine.

## WHEN AND HOW TO USE INSULIN

If after two or three days on trial diet number one there is still sugar in the diabetic's urine he is given from three to five units of insulin twenty minutes before eating two or three times a day; and if in twenty-four hours his urine still contains sugar the insulin is increased to six or eight units three times a day. If in another twenty-four hours the sugar has not disappeared from the urine, fifteen units are given three times a day. In the severe cases twenty units may have to be given three times a day before the patient's urine becomes sugar free on trial diet number one, but in the majority of cases five or ten units two or three times a day will be sufficient. When the patient's urine becomes sugar free on diet number one from the use of insulin, the diet is increased to number two and if the sugar returns in the urine the insulin dosage is increased until the urine is free from sugar. Then diet number three is given, and if the sugar reappears in the urine the insulin is increased by three to five units before each meal, each day, until his urine becomes sugar free.

The diet is increased to trial diet number four in the same way, increasing the insulin slowly until the urine is sugar free. After the patient's maintenance diet and his insulin dosage have been worked out as above described he is kept on it, with the same dose of insulin for several weeks, the effort being to keep the urine sugar free, without insulin reactions. If the insulin reactions occur, the insulin is reduced or the food increased.

*Discontinuing the Insulin.* In many cases of diabetes after a few weeks' rest to the pancreas by dieting and by the use of insulin, the patient's carbohydrate tolerance is increased. In such cases the insulin dose is gradually decreased and if the sugar does not reappear in the urine the insulin may be discontinued permanently. When the insulin is discontinued the patient should be made to realize that he should never overeat, that a food debauch may break his carbohydrate tolerance and he will then have to use insulin again.

From the above statement of facts the idea that once a person begins the use of insulin it is dangerous or harmful to leave it off is proved to be erroneous. It is true the severe diabetic may have to continue insulin for the rest of his life, but without insulin he could not live long. With insulin and the proper diet there is no reason for diabetes to interfere with the health or efficiency of the most severe cases of diabetes. Insulin is therefore a great boon to diabetics and thousands are living today who would have been dead without it.

Insulin is not habit forming, but it should not be left off suddenly without at the same time reducing the diet in proportion to the amount of insulin used. The patient taking insulin should keep on hand an adequate supply, but if he cannot get insulin he should reduce his food by one-half, or even two-thirds, and leave off the fats altogther, because the principal danger from leaving off the insulin suddenly is acidosis, or even coma. It is not altogether the leaving off the insulin that is harmful, but the greatest danger lies in continuing the extra food that the diabetic cannot metabolize without using insulin.

We have had a number of diabetics whose carbodydrate tolerance was increased to such a degree that they did not need the insulin, but they insisted upon continuing it because they said they felt better while using it. This observation has been made by others, which leads us to believe that insulin may have other physiological properties besides its effect on carbohydrate metabolism.

The patient using insulin should be made to understand that if for any reason his food is cut down his insulin dose should be reduced in proportion. If he

fasts a day he must use no insulin without explicit directions from his physician; and if diarrhoea develops the dose of insulin should be reduced because food may pass through the intestines without digestion and the diabetic with diarrhoea may have a low blood sugar, which, with the addition of insulin, may be reduced to a dangerously low level. A number of clinicians have reported hypoglycemic reactions from the use of even small doses of insulin with diabetics who have diarrhoea.

*The Time of Administration.* There is a difference of opinion as to the best time for the administration of insulin. We believe, however, that the method employed by Banting" in the Toronto Clinic of using insulin two or three times a day, 20 minutes before the morning and evening meal, has many advantages. In the severe cases insulin may be given before each of the three meals and if the patient is sick enough to require a night nurse, the midnight dose may be added. In the case of a laborer, Woodyatt and Wilder advise giving only one dose a day and that before breakfast. In such cases most of the carbohydrates for the day are given for breakfast.

*The Method of Administration.* It may be stated, without fear of contradiction, that no pancreatic extract or other preparation said to contain insulin is of any value whatever when administered by mouth. The only method of administering insulin that will give any results is hypodermatically. It is best given under the skin, and not intramuscularly. When administered intramuscularly insulin causes pain because it has a slightly destructive and irritant effect upon muscular tissue.

The subcutaneous spaces in the outer surface of the arm, two or three inches below the shoulder, and over the breast and abdominal muscles or the inner surface of the thighs are favorable sites for the use of insulin because it can be used there without causing tension of the skin. The needle should not be used at the same place twice in succession because it may produce scar tissue and when that occurs the insulin, if absorbed at all, will be absorbed very slightly.

The fine platinum, or gold hypodermic needle which can be sharpened every few days on a fine stone, and which can be flamed, is less painful than the ordinary needle and its use saves the time necessary for boiling the steel needles. The initial cost of the platinum or gold needle is more, but since it will not rust, it is economical in the long run. Strict asepsis should be taught to, and practiced by the diabetic using insulin because even a slight infection may change a mild case of diabetes into a severe one.

*The Insulin Reaction.* For a time it was feared that the reaction from an overdose of insulin might result in lowering the blood sugar to a dangerously low level, but with experience there is no longer fear of the insulin reaction with the size doses now ordinarily used. Unfortunately someone called the hypoglycemic reaction "insulin shock," which has had the effect of unduly stressing the dangers of an overdose of insulin. Indeed, it is desirable for patients using insulin to have an occasional mild reaction, the symptoms of which are hunger, weakness, nervousness and sometimes profuse perspiration. We have had many insulin reactions with our patients, who are relieved in a very few minutes by taking three ounces (one-half glass) of orange juice, or a teaspoonful of sugar. A glass of buttermilk will also relieve the symptoms of the insulin reaction but it is slower in its action than orange juice or sugar.

While the insulin reaction is usually harmless, it is within the range of possibility that a severe reaction could occur in which the symptoms would be collapse and unconsciousness. Convulsions following the administration of insulin in adults have been reported. Children with severe insulin reaction may become unconscious or have convulsions, but with the size doses that are used these symptoms are not likely to occur. In other words, there is no more danger of a serious reaction from the use of insulin than there is from an overdose of thyroid extract. If a serious reaction should occur the best treatment is to give adrenalin 0.5 to 1 cubic centimetre hypodermatically, which will restore consciousness in a few minutes by mobilizing the glycogen in the liver. The effect of adrenalin, however, is evanescent and the patient should at the same time or as soon as consciousness returns, be given orange juice or glucose by mouth. Glucose may be given intravenously if the patient is unconscious.

## THE TREATMENT OF DIABETIC COMA

While it is always best to treat diabetic coma in a hospital it often is necessary to treat it at home. The general practitioner,

therefore, should be prepared at all times to treat diabetic coma, because an emergency call at night may be to such a patient; and when such a call comes he should plan to stay with the diabetic day and night until the patient comes out of coma or dies. It is even more important to remain with a coma patient than with an obstetrical case. Sustained vigilance on the part of a physician is often the price to pay for the life of a diabetic in coma.

The physician who is likely to be called to a suspected case of diabetic coma should carry in his handbag 200 or 300 units of insulin, several ampules of glucose, a few test tubes, small bottles of the reagents for Benedict's qualitative tests for sugar and for diacetic acid. A spirit lamp and a small bottle of wood alcohol are useful, though the tests for sugar may be made by placing the test tubes containing the reagents and urine in a tin cup of boiling water on a kitchen stove and keeping them there for five minutes.

The first thing to do in suspected diabetic coma is to examine a specimen of urine for sugar and diacetic acid. If both are present in large quantities, one need not wait to make the quantitive tests or for a blood sugar determination before giving twenty to fifty units of insulin and at the same time give a glassful of orange juice. The glucose may be added to the orange juice, though it is important to keep an accurate account of the amounts given.

The next step is to clear out the colon by enemata, repeating them every hour until there has been a thorough bowel evacuation. An ounce of magnesium sulphate may be given by mouth if the patient can swallow.

If food has been taken within three hours before the physician sees the case, the stomach should be emptied by gastric lavage. Indeed, it is best to use gastric lavage with moderately hot water in every case of diabetic coma, not only to remove any accumulation of food in the stomach but the heat from the warm water in the stomach stimulates the intra-abdominal circulation and is effective in overcoming shock. A quart of water may be left in the stomach after it is empty of food.

Water by mouth, if the patient can swallow, is important, not less than one pint every one or two hours for an adult patient with a tendency to coma. One should be very sure that the coma patient can swallow before giving him water by mouth. It is perfectly possible to drown an unconscious patient by giving water, or glucose solution in spoonful quantities. If the laryngeal or epiglottidean reflexes have been abolished fluids given by mouth will gravitate into the open larynx. If there is any doubt about the patient's being able to swallow, the glucose should be given intravenously, and water, one pint every two hours, may be given by hypodermoclysis.

If the patient cannot void his urine, a catheterized specimen should be obtained every half hour. If in one-half hour the examination of a second specimen of urine shows no change in the amount of sugar and diacetic acid, thirty units of insulin and sixty grams of glucose may be given intravenously; and in an hour this dose may be repeated if there is no change in the amount of diacetic acid.

After the initial dose, twenty to thirty units of insulin may be given every two or three hours until the patient comes out of coma; always guarding it with twice as many grams of glucose or dextrose. There is no danger whatever in giving large doses of insulin provided enough glucose is given at the same time to prevent hypoglycemia. It should be understood that in treating diabetic coma one is not trying to render the urine sugar free. It is the acidosis, manifested by the presence of diacetic acid in the urine, that needs to be combated; and in giving glucose or dextrose or other forms of carbohydrates to the coma patient it not only prevents insulin shock, but the fatty acids that are killing the patient are "burned in the fire of the carbohydrates."

The diabetic in coma is in a state analogus to surgical shock and should be treated accordingly. He should be kept warm with blankets, and hot water bottles may be used, remembering not to use them too hot because a hot water bottle burn may be a serious thing in a diabetic. Caffeine sodio-benzoate hypodermatically, or hot coffee or hot tea without cream by mouth, if the patient is able to swallow, should be given every two or three hours until the patient comes out of coma.

After the patient comes out of coma the dose of insulin should be reduced and the amount of carbohydrate should be correspondingly diminished. Usually twen-

ty units three times a day are sufficient, and the patient placed on the trial diet, giving no fats until the diacetic acid disappears from the urine. In the fat subject it is sometimes necessary to give more carbohydrate and more insulin because the patient's own fat may be burning enough to produce acidosis. In treating diabetes one should never forget the endogenous sources of food.

After the diacetic acid disappears from the urine the amount of food, including fats, is gradually increased up to the patient's maintenance diet, and enough insulin is given to keep the patient sugar free.

### INSULIN IN RESPIRATORY INFECTION

Increased doses of insulin are necessary in the acute respiratory infections. There are no fixed doses of insulin for any groups or classes of diabetics. The dose for each patient must be worked out according to his proved glucose tolerance, and the dose may vary with an individual diabetic, sometimes without any discernible cause. The dose of insulin must be increased with the occurrence of infections because they lower sugar tolerance and tend to the production of ketone bodies. This is particularly true of the acute lung infections in diabetics, in whom coma was the frequent modus mortui up to the time of insulin. Now the diabetic with pneumonia can be carried through the crisis by giving large doses of insulin, 50 to 100 units a day, the dose depending upon the amount of sugar and diacetic acid in the urine. At the same time each day 500 to 1000 grams (½ to 1 litre) of a ten per cent solution of dextrose should be given intravenously, if the patient cannot swallow liquid. If the case is a very severe one it is best to use the dextrose solution intravenously, or in a five per cent solution by hypodermoclysis, even if the pneumonia patient can swallow liquids. In addition water should be given freely. One should not be satisfied treating diabetes complicated with pneumonia or other infections with less than four litres (quarts) of fluids a day except in cases with a very weak heart.

Sometimes acute lobar pneumonia in a diabetic brings on coma in a few hours, and even though the lung is consolidated there is no cough. In one such patient, a child ten years old, a general practitioner made the diagnosis of pneumonia from the physical signs even though the diabetic child was in coma and was not coughing. The patient was brought out of coma by the use of insulin and dextrose intravenously. She made a beautiful recovery.

Pneumonia usually does not break the diabetics carbohydrate tolerance permanently; and after the crisis it is important to watch the patient's blood sugar and urine, and reduce the insulin dosage in order to prevent hypoglycemic reactions.

Even a slight cold may result in pneumonia and thus precipitate coma. The diabetic with coryza or bronchitis therefore should be kept in bed and several specimens of urine examined a day. If the amount of sugar is increased and diacetic acid appears in the urine, the dose of insulin must be increased and the fats in the diet decreased. Often it is necessary in infections to cut out the fats entirely and increase the carbohydrates until the diacetic acid disappears from the urine.

*Tuberculosis.* On the undernutrition diet, before insulin was discovered, tuberculosis was a frequent sequel of diabetes; and it then was the terminal infection responsible for many deaths. Tuberculosis still occurs in diabetes, but it is a much less serious complication because with the use of insulin the tuberculous diabetic can metabolize sufficient food to build up his nutrition so that he can resist and conquer the infection of tuberculosis.

It has occurred to us from an experience with a tuberculous diabetic, and other tuberculous patients, that perhaps a diet deficient in vitamin A may be a factor in the etiology of pulmonary tuberculosis. This patient, a college graduate, developed diabetes in 1920. He had learned to weigh and measure his food and calculate his own menus. He kept his urine sugar free, but he was much undernourished on a diet of about 1200 calories a day. He came to us in 1924 to determine whether or not he should have insulin. In making the routine physical examination it was found that he had unmistakable physical signs of pulmonary tuberculosis. X-ray examination confirmed the diagnosis. He had been on a high fat diet but he did not like milk, cream, or butter that are rich in vitamin A; and was getting his fats from olive oil, which he liked, but which contains no vitamin A, that is known to protect against acute respiratory infections. With the use of insulin he could take a high caloric diet, and he changed his fats from olive oil to milk, cream and butter.

He improved rapidly and soon was clinically cured of his tuberculosis.

Of course, one case does not prove that a diet deficient in vitamin A predisposes a diabetic to tuberculosis; but that added to the experience of finding other patients who did not drink milk or cream or use butter and developed tuberculosis, and in whom the disease was arrested after going on a diet rich in milk, cream, butter and eggs, that are rich in vitamin A, have so impressed us that we now insist upon our diabetics getting his fats largely from milk fat that is rich in vitamin A.

The diabetic with tuberculosis should be hospitalized over a long period because it is very difficult for such cases to be cared for properly at home.

### MANAGEMENT OF THE SURGICAL DIABETIC

Before the discovery of insulin surgery upon the diabetics was followed by a high mortality. Now operations upon diabetics who have been prepared by the proper diet and the use of insulin are as safe as upon any other class of individuals. Except in a very few severe diabetics who occasionally seem to be totally depancreatized, the blood sugar can be reduced to normal and the ketone bodies can be removed from the blood in a very few days; and the patient can be prepared for any operation.

Gas-oxygen and spinal anaesthesia are the preferable anaesthetics because ether tends, at least temporarily, to produce hyperglycemia. Chloroform should never be used upon the senile diabetic because arteriosclerosis is frequently associated with diabetes and no one can tell the state of a heart muscle in an old diabetic. Local or spinal anaesthesia is preferable to a general anaesthetic particularly in the surgery of the extremities. Even major operations upon the diabetic, as those of the abdominal cavity, may often be performed under spinal or local anaesthesia.

Following operations of any kind upon the diabetic the urine should be examined for sugar and diacetic acid every three or four hours. If there is no sugar or diacetic acid in the urine and the patient can take no nourishment it is best not to give insulin the first twenty-four hours after operation; but if there is diacetic acid in his urine the insulin should be given, and glucose, intravenously, if necessary; two grams to each unit of insulin. If there is a tendency to acidosis, thirty or forty units of insulin may be given three or four times a day, or every three hours; but at the same time sixty or eighty grams of glucose should be given to prevent a hypoglycemic reaction and to aid in metabolizing the fatty acids in the blood and tissues. If there is only a small amount of diacetic acid in the urine, ten or fifteen units may be given three times a day, giving at the same time twenty or thirty grams of glucose either by mouth or intravenously. If the patient can retain it, orange juice may be given instead of glucose. One glassful (six ounces) of orange juice contains about twenty grams of carbohydrate.

If glucose has to be given intravenously it is best to use the ampules prepared by reliable pharmaceutical houses. It is important for the glucose solution to be sterile, but it should never be boiled, because boiling cooks sugar and forms a carmel-like substance, which in the blood may cause death. If the sterile solution has to be made fresh, boil the water, and after it has cooled for a few minutes add the glucose to make a five per cent solution, place in sterile bottles and cool to body temperature by running cold water over the bottles.

An important post-operative procedure with diabetics is to give them plenty of fluids, not less than four litres (quarts) of fluid a day. If the patient is vomiting, it is best to give fluid intravenously or by hypodermoclysis. It will not do to depend upon proctoclysis for the administration of fluids and glucose to the diabetic after operations, because absorption from the colon is uncertain and the post-operative diabetic must have fluids and carbohydrates to keep down acidosis.

From the above suggestions regarding the surgery of diabetes the difficulties of caring for such cases at home would seem to be almost insurmountable. The general practitioner, therefore, should advise the diabetic with gangrene or other surgical complications to go to a hospital and place himself under the care of an internist who has had ample experience in treating and dieting such cases. Likewise it is important to select a surgeon who has had a large experience in operating on diabetics. Of course in emergencies the general practitioner may have to operate on the diabetic at home, under which circumstances he will have to do the best he can with the resources at his command.

*Appendicitis.* Diabetics may have acute appendicitis and in the severe cases the

infection may bring on acidosis and even coma. When the diagnosis of acute appendicitis is certain, there should be no delay in the operation even if coma is impending. In such cases 1000 c.c. of a 10 per cent dextrose solution should be given intravenously and at the same time 15 to 50 units of insulin should be given hypodermatically. At least 3000 or 4000 c.c. of fluid must be given a day. 1000 c.c. of 5 or 10 per cent dextrose solution may be given intravenously, guarded by 25 to 50 units of insulin given hypodermatically every eight hours and extra doses of insulin may be added if the blood sugar is high and diacetic acid is present in the urine. Another 1000 c.c. of normal salt solution, or Ringer's solution may be given by hypodermoclysis, or by proctoclysis. The intravenous dextrose solutions and insulin should be continued for several days until all danger of post-operative acidosis is over. The diet of the diabetic convalescing from an abdominal operation should be adjusted to his particular needs the same as if he had not been operated upon.

*Gall Bladder Infections.* When the anatomical relations of the gall bladder, liver and pancreas are considered, coincidental infections of the gall bladder and liver and pancreatic duct and the islands of Langerhans must be frequent. Unquestionably the same cause that produces gall bladder and liver infections may be responsible for the pancreatitis that often precedes diabetes. As Joslin[2] has pointed out the patient with gall bladder infection, or gall bladder stones, is a potential diabetic; and the surgical drainage, or removal of the gall bladder may improve the carbohydrate tolerance of the diabetic. Joslin states that "it is sound doctrine to advise the removal of gall stones to avert diabetes."

The preparation of the diabetic for a gall bladder operation, and the after treatment should be the same as that previously described for appendicitis operations on the diabetic. The mortality in gall bladder operations on the diabetics should be no greater than in non-diabetics, provided that the surgeon has associated with him a clinician experienced in directing the diet and use of insulin before and after operations on diabetics. The mortality of gall bladder surgery on diabetics by the amateur surgeon, who has a limited knowledge of the nutritional principles involved in the management of diabetes, will be inordinately high.

### DIABETIC GANGRENE

Diabetic gangrene is the most frequent and the most serious complication of diabetes in the adult diabetic after fifty years of age. It is essentially a part of a general arteriosclerosis, involving particularly the lower extremities, and therefore occurs with increasing frequency as the diabetic advances in years. Diabetic gangrene usually occurs in mild diabetes of the senile diabetic, who has considered his diabetes of little consequence because he can keep his urine sugar free, on a liberal diet. It therefore is important to impress upon the senile diabetic that the very mildness of his disease constitutes a danger to him because he does not have to diet as carefully as the more severe diabetic whose urine becomes loaded with sugar on the slightest infraction of his dietary regimen.

Morrison, in a study of mortality statistics in diabetes in Boston found that between the years of 1895 and 1913, 23 per cent of 775 fatal cases resulted from gangrene. This is in marked contrast to the recent statistics of Joslin who found that deaths from diabetic gangrene occurred in only 3.3 per cent of his patients who died. Certainly a contributing factor in Joslin's very low mortality and morbidity of gangrene lies in the thoroughness of his instruction to diabetics in methods of preventing gangrene, and to his management of his gangrene patients before, during, and after operations. Diabetic gangrene will continue to grow less frequent as diabetes and its complications are more properly treated by general practitioners who treat probably 95 per cent of diabetes.

*Preventing Gangrene.* Much may be accomplished in the prevention of diabetic gangrene by impressing upon the adult diabetic the importance of keeping down the fats in his diet, thus decreasing his tendency to arterio-sclerosis. He also should receive careful instruction regarding personal hygiene, particularly as applied to the care of his feet.

The diabetic should have his regular morning full bath and should never fail to bathe his feet before retiring. Indeed, he should be more careful about the cleanliness of his feet than of his face. He should put on fresh hose every morning and should have two or three pairs of

comfortable shoes so that he can change them each day and allow the other one or two to dry out before using them again. He should exercise great care in trimming his toe nails and in shaving his corns; because gangrene of the foot often starts from minor injuries on the toes.

Perhaps the most important one rule that can be taught the adult diabetic is that no matter how trivial an injury to his foot or toes he may receive he should consult his physician immediately so that he may receive the proper treatment to heal the lesion. The nicking of the skin in trimming a toe nail, or a corn, or other callosity of the foot, or a small blister on the foot rubbed by a shoe often is the beginning of gangrene of the foot, that may result in the loss of the victim's leg, or even his life may be sacrificed by delay in receiving the appropriate treatment.

*Treatment of Diabetic Gangrene.* Rest in bed is important even when the slightest gangrenous spot appears on any part of the foot. The lesion should be sponged off several times a day with a 50 per cent solution of alcohol, with or without mercuric chloride (1 to 5000). A sterile gauze sponge saturated with this alcoholic and bichloride solution should be kept wet for an hour or two in the beginning of treatment. This will tend to keep down the infection and heal the lesion. The application of moderate dry heat from electric lights bulbs in a frame so that the bulbs will not be too near the foot is helpful in promoting the circulation of the foot and leg in the mild and dry form or gangrene. This treatment may be sufficient to heal the small dry superficial gangrenous spots that appear on the foot of diabetics whose blood sugar is kept down by the proper diet, and the use of insulin, if necessary.

*When to Amputate.* The question of whether or not, and when, to amputate must be decided upon the conditions found in each individual case. In the dry cases usually in the senile diabetic in which there are no evidences of systemic infection it is desirable to wait until the diabetes can be controlled by dieting and by the use of insulin. Usually this can be accomplished in two or three days. In the moist cases, the fulminating type, in which there is fever, perhaps chills, sweating, leucocytosis, and prostration, septicemia is impending or may be present already, an immediate operation is demanded. In such cases the dietary management is much the same as that described in treating infections of any kind in diabetics. Even in the most severe cases the diabetes usually can be controlled; and if the patient dies it is from the septicemia that has already taken place; or from the senile heart that is so often associated with the general arteriosclerosis seen in diabetes. Such cases should be recorded as deaths from septicemia, or arterioses, to which the diabetic gangrene has been only a contributing factor.

*How Much to Amputate.* When it has been found necessary to amputate in gangrene of the toes or feet in diabetes, the site of the amputation is an important consideration, depending upon the conditions found in each individual case. While conservatism is desirable in deciding the site of an amputation in diabetic gangrene, the rule of going well above the gangrenous area should be followed; because if the tissues incised are involved in the infection usually associated with gangrene, healing of the wound will not take place, or be very slow, and a second and higher amputation may become necessary. It is rare that one or two gangrenous toes may be amputated and the wound heal properly. It does occasionally happen when the circulation in the foot is good, and the line of demarcation of the gangrene limited to the mid-portion of the toe, that a toe may be amputated and the wound heal properly. Even in such cases in a few months or a few years gangrene may reappear in the foot and an amputation below or above the knee has to be done. If the gangrenous area extends into the tissues back of the toes the amputation should be just below the knee, provided the arteries in that locality are not too sclerotic. X-ray pictures will sometimes show the extent of the arteriosclerosis and are helpful in deciding how much of the leg must be sacrificed. If the surgeon is uncertain as to the vitality of the tissues below the knee, it is better to err on the side of saving the life of the victim rather than attempting to save a few inches of his leg.

When gangrene of any part of one foot occurs and the amputation is necessary, the problem then becomes one of saving the other foot because it is likely that the same arteriosclerotic changes have occurred in both feet that predispose to infections and gangrene. The diet of the patient should be adjusted to his needs, and he should be taught the Buerger exercises, and the regimen necessary to keep the

circulation in the foot and leg in the best condition possible. The patient should also be impressed with the precautions necessary to prevent the occurrence of trauma and infections of his remaining foot.

SKIN INFECTIONS

*Carbuncles.* Carbuncles are a frequent and serious complication in diabetes, particularly on the neck, and on the back of the obese arteriosclerotic diabetic who up to that time had not regarded his diabetes as a matter of importance. Carbuncles usually develop in the mild diabetic who has had diabetes for years, and who can control his diabetes by dieting but does not. Carbuncles always lower carbohydrate tolerance, and change a mild diabetes into the severe type with mild acidosis, and coma not infrequently supervenes in the neglected cases.

Carbuncles, formerly a frequently fatal complication in diabetes, with the use of insulin and the soluble carbohydrates, and prompt radical surgery usually yield to treatment, except in the neglected cases when septicemia has occurred before treament is begun.

If the diabetic with a carbuncle is not too toxic from sepsis, a delay of twenty-four hours until the ketone bodies in the blood can be oxidized is advisable. In such cases three ounces (90 grams) orange juice and five ounces (150 grams of five per cent dextrose solution) (18.3 grams carbohydrate) may be given orally every three hours day and night. Ten units of insulin are given hypodermatically with each feeding. Usually in twenty-four hours the urine is sugar free and the diacetic acid has disappeared from the urine. Then free incision and drainage; and what is better when there is a line of demarcation around the carbuncle, the diseased tissue is excised. This leaves a wide open wound from which there is no absorption of the infective organisms and its toxins. When excision is practiced and the wound becomes thoroughly healthy, with no pus pockets present, skin grafting hastens the healing process; and has been resorted to in several of our diabetics with excellent success.

*Furunculosis.* Furunculosis is a frequent complication in neglected diabetes. It is more apt to occur in diabetics who take infrequent baths. Sometimes small or even large abscesses occur, particularly in the axillary region, and the condition tends to become chronic. In many such cases furunculosis, which does not yield to the usual methods of treatment suggests to the physician that diabetes may be a factor in the infection and a urinary analysis shows glycosuria. Sometimes, however, in the arteriosclerotic obese diabetic, there is no sugar in the urine but he has a high blood sugar, the so-called "high renal threshold," and the furunculosis will not yield to treatment until the blood sugar is reduced and kept within the normal limits. Such a case was referred to us recently by a dermatologist. The patient's urine was free from sugar, except an occasional trace, which was thought by his physician to be "alimentary glycosuria." His fasting blood sugar was 0.225. At the same time a specimen of urine was free from sugar. The severe more or less generalized dermatitis with intense itching, and many furuncles about over his body, some of which became small abscesses in the axilla, did not yield to the usual treatment until he was placed on a diabetic diet when the skin lesions cleared up quickly.

Diabetes is at times associated with various other skin lesions which do not clear up until the diabetes is under control.

*Epidermophytosis.* Epidermophytosis of the feet ("athlete's foot") has become almost a universal disease, particularly among golfers and others who use shower baths at clubs and public places after participating in various games and other sports. The diabetic seems prone to epidermophytosis and it seems particularly difficult to cure them because of the arterio-capillary fibrosis of the extremities in the senile diabetic. The abrasions of the skin between the toes in such cases are often the area for the infection that results in gangrene. The diabetic therefore should regard epidermophytosis as a serious condition; and he should be relentless in his efforts to eradicate the infection that causes it.

Greasy ointments should be avoided in the treatment of epidermophytosis. Perhaps the best parasitic is salicylic acid in alcoholic solutions applied twice a day on cotton applicators to the cracked surfaces between the toes, after bathing and drying the feet. The following prescription has given very good results in treating epidermophytosis in diabetics:

Acidi Salicylici .....Grs. XX (1.33 gm.)

Acidi tannici .....Drs. I (4.0 gm.)
Spts. rect 70% q.s.a.d.—Oz. IV (60 gms.)

M. Sig: Apply on cotton applicator to infected areas twice a day after bathing and drying feet.

After the cracked surfaces between the toes have healed the stearate of zinc powder should be dusted between the toes twice a day in summer.

Erysipelas, or erysipeloid infection not infrequently occurs as a complication of epidermophytosis. The diabetic with "athlete's foot" should be taught to go to bed and call in his physician immediately if any such infection should occur. Such a case should be treated as any other severe infection in a diabetic.

### PREGNANCY

The question often is asked should the diabetic woman be allowed to become pregnant. Our reply has been that if she can be confined in a hospital in which the obstetrician can have associated with him a competent internist, the hazard of the puerperium is increased but little. There is no reason why the pregnant diabetic should not be cared for, and confined at her home if her diet can be directed by one of the many general practitioners who have mastered the simple problems in nutrition required in the management of diabetes. Here again the physician's consience should be his guide as to whether he should look after the pregnant and parturient woman at home or at a hospital, or should he refer her to a clinician who has had a larger experience in treating diabetes.

The diabetic wife who cannot obtain good medical attention during her pregnancy and in her confinement should use contraceptives rather than run the risk to herself and her child of pregnancy and parturition. It has been observed that the offspring of a diabetic mother is often abnormally large, sometimes requiring Caesarian sections for delivery. This perhaps is due to the high placental blood sugar of the mother providing extra nourishment for the foetus. Joslin[11] suggests that for the last few months of pregnancy that the undernutrition diet be given the mother so that the foetus will not grow too large.

Hypoglycemia has been noted in the latter months of pregnancy, and the pregnant diabetic on an undernutrition diet should be watched for hypoglycemic symptoms, such as hunger, weakness and nervousness, or even attacks of unconsciousness and convulsions. Joslin suggests that a relatively high carbohydrate low fat diet is best during the last weeks of pregnancy.

Gray and Feemster[11] observed hypertrophic islet cells in the child of a diabetic mother who died of hypoglycemia a few days after birth. They suggested the careful observation for hypoglycemia symptoms, and frequent blood sugar determinations in the new born child of a diabetic mother.

### PERSONAL HYGIENE OF THE DIABETIC

The diabetic is just as ignorant as the average person regarding the function of the various organs and tissues of his body, and since he must take extraordinary good care of himself for the rest of his life he should be taught personal hygiene, with particular reference to measures to prevent the complications of diabetes. One or more hours may be profitably spent in teaching him the facts that he should know about ventilation, rest, exercise, bathing, the care of his teeth, and intestinal elimination. He should learn that he should never overwork, that long hours or excessive mental or physical fatigue often lowers sugar tolerance.

The physician should get from the diabetic the character of his work, the number of hours a day he is at his place of business and determine whether or not he is overworked. It happens not infrequently that the patient's urine is sugar free on his optimal diet, while resting in bed, but when he returns to his work the sugar returns. If he is then instructed to have shorter hours and be relieved of some of his work he can carry on and keep his urine sugar free. Acute and chronic fatigue are great foes of the diabetic.

*Exercise and Rest.* The question of exercise for the diabetic is an important one. Usually it is desirable for the diabetic whose urine is sugar free, to take daily moderate systematic exercises; but he should avoid too strenuous or long continued muscular effort. The diabetic should be taught a system of exercise suitable to his particular needs and which he may take in his room by an open window, before his morning bath and perhaps at night before retiring. Included in the exercises are movements of the muscles and joints of the feet and toes with the idea

of improving the circulation of the extremities. Outdoor exercise, particularly walking, is desirable and should become a part of the daily life of the diabetic. If the diabetic has not been accustomed to exercise he should begin with a walk of a hundred yards and gradually increase the distance each day as his strength increases, until he is walking several miles a day. Golf is an ideal, though expensive form of exercise for the diabetic, but the man over sixty should never play more than nine holes in an afternoon or morning.

The diabetic needs more sleep than the average person and should be taught to remain in bed nine hours at night, even if he does not sleep all the time. He should have a siesta of at least half an hour after the noon meal. Five and ten minute rest periods every two or three hours during the day are helpful, particularly to mothers and housekeepers.

The diabetic should be impressed with the necessity of two or three thorough bowel evacuations each day. Obstinate constipation is too frequently associated with acidosis for there not to be a relationship between them. Fortunately the diabetic diet of fruit, five and ten per cent vegetables, and fats will enable many to overcome constipation.

The diabetic should keep an accurate record of his daily or semi-weekly weight, and under no conditions should allow himself to become, or remain overweight. Indeed, it is best for him to be about ten pounds under the average weight of an individual of his height and age.

Finally it is important to impress upon the diabetic the fact that he has no reason to feel sorry for himself because he has diabetes; but he should rather be grateful to his physician for finding that he has a disease which need not shorten his life and which can be kept under control by the new methods of treatment. The diabetic, however, should feel ashamed of himself if he does not conquer his disease because most of the ills of the diabetic are a confession of his ignorance or self-indulgence.

BIBLIOGRAPHY

1. Allen F. M.: Diabetes Mellitus. The Cyclopedia of Medicine, Vol. 4, p. 498. F. A. Davis Company, Philadelphia, 1933.

2. Joslin, E. P.: Treatment of Diabetes Mellitus. P. 119. Lea and Febiger, 1928.

3. Hoffman, Frederick L.: The Diabetic Record of 1932, The Spectator, July 6 1933.

4. Allen, F. M.: Loc. cit. p. 505.

5. Harris, Seale: Combatting the Increasing Death Rate From Diabetes. The Miss. Doctor, 20-24, March, 1933.

6. Allen, F. M.: Loc. cit. p. 508.

7. Harris, Seale: Food Conditions and Nutritional Diseases in Europe. Med. Rec., July 19, 1919.

8. Harris, Seale: The Use of Insulin by the General Practitioner. So. Med. J. 18:3, 159-173, March, 1924.

9. Harris, Seale: The Home Treatment of Diabetes. N. O. Med. Jour.

10. Harris Seale: The Treatment of Diabetes. Int. Clin.

11. Banting.

12. Joslin, Loc. cit. p. 540.

13. Ibid. p. 871.

14. Gray, S. H., and Feemster, L. C.: Compensatory Hypertrophy and Hyperplasia of the Islands of Langerhans in the Pancreas of a Child Born of a Diabetic Mother. Arch. Path. & Lab. Med. 1:348, 1926.

## LIPOID NEPHROSIS AND ITS RELATION TO GLOMERULAR NEPHRITIS

Edwin G. Bannick's, Rochester, Minn. (Journal A. M. A., Jan. 20, 1934), present study of lipoid nephrosis and the so-called nephrotic syndrome suggests that lipoid nephrosis, in adults at least, is a form of chronic interstitial nephritis. The frequent association of lipoid nephrosis with definite glomerular nephritis, the fact that cases of clinically pure lipoid nephrosis may terminate in uremia, from the end-stages of glomerular nephritis, and the fact that not a single case typical of lipoid nephrosis in an adult has come to postmortem examination at the Mayo Clinic suggest that at least most cases of lipoid nephrosis represent a stage in, or an unusual type of, glomerular nephritis. If other cases occur they are extremely rare. The relatively high percentage of patients who have been cured of lipoid nephrosis, or who have shown marked and prolonged improvement, and the relatively slight evidence of glomerular nephritis in most instances at postmortem examination, even among patients who have given clinical evidence of glomerular nephritis, justify the grouping of these patients clinically in a separate group from that of ordinary glomerular nephritis. As long as the term lipoid nephrosis has been so uniformly accepted there seems to be no good reason for changing it.

## WHAT EVERY WOMAN DOESN'T KNOW—HOW TO GIVE COD LIVER OIL

Some authorities recommend that cod liver oil be given in the morning and at bed time so as to assure an appetite for the oil, while others prefer to give it after meals in order not to retard gastric secretions. If the mother will place the very young baby on her lap and hold the child's mouth open by gently pressing the cheeks together between her thumb and fingers while she administers the oil, all of it will be taken. The infant soon becomes accustomed to taking the oil without having its mouth held open. Mead's Newfoundland Cod Liver Oil, of minimum acidity and prepared from fresh healthy livers, is well tolerated by infants and children and is palatable without flavoring.

If given cold, cod liver oil has little taste, for the cold tends to paralyze momentarily the gustatory nerves. As any "taste" is largely a metallic one from the silver or silverplated spoon (particularly if the plating is worn), a glass spoon has an advantage.

Mead's 10 D Cod Liver Oil is made from Mead's Newfoundland Cod Liver Oil. In cases of fat intolerance the former has an advantage since it can be given in 1-3 to 1-2 the usual cod liver oil dosage.

# PERSONAL OBSERVATIONS ON FRACTURES ABOUT THE ELBOW*

ISIDORE COHN, M.D., F.A.C.S.
Professor of Surgery, Graduate School of Medicine
Tulane University
NEW ORLEANS, LA.

I have nothing new to present. It is given to few to have new ideas. I have some old truths to discuss. Truths which bear repetition. It is the "twice told tale" that is important because it relates to our daily life and experiences.

The subject which I have chosen is far from standardized. Injuries about the elbow comprise countless combinations, therefore statements which seem to reduce the subject to a series of formulae are misleading and incorrect.

End results in fractures of the elbow are not good. It is wise to make this admission at the outset. A great many cases are seen in the large centers by interns on emergency duty. They are not as keenly aware of the danger of delay in immediate reduction as the more experienced surgeon. When swelling occurs it is too late to attempt reduction and immobilization in the most desirable position. If manipulative reduction of a fracture about the elbow is attempted when great swelling exists immobilization in flexion will cause interference with circulation, and at times an ischemic contracture will result. This single dreaded sequel to fractures about the elbow should be sufficient deterrant to any individual from assuming the responsibility unless he is prepared to care for any or all of the possible complications.

What causes Volkman's ischemia, and how can it be avoided? This dreaded complication is not long delayed in appearing if the bandage is too tight, or if there is hemorrhage about the joint. If the bandage is too tight, the bandage should be cut. If there is hemorrhage, free incision and evacuation of the clots should not be delayed. Once a contracture develops a long period of treatment with uncertain results can be expected. The avoidance of ischemic contractures is easier than the cure.

Proper early handling of injuries about the elbow will avoid many late complications.

The handling of fractures requires meticulous personal attention.

Each case must be individualized.

Before discussing the anatomic factors essential in the treatment let us turn our attention to the diagnosis of fractures about the elbow.

Incomplete clinical examinations are responsible for failure to make a correct diagnosis in most cases. This has come to be true only since the advent of the X-ray, as this method represents the line of least resistance.

The popular trend today is towards preventive medicine. Certainly, prevention of prolonged disability and deformities is desirable. If more patients were adequately examined immediately following the accident there would be less demand for the cure of ankylosed deformed elbows.

In reference to the examination a few points should be emphasized—a brief history of the accident, the direction of the fracturing force, the loss of function and the time elapsed are of value in indicating the probable location of the injury, and whether it will be possible to maintain immobilization in a desirable position. Inspection indicates quickly deformity, swelling, and change in the axis of the limb. Palpation, which should always be light and gentle, indicates location of pain. There is no single sign more valuable than localization of pain. When this is combined with the history of loss of function a diagnosis can in most cases be made.

Crepitus should not be sought for, and the elbow should not be manipulated until the patient has been anesthetized.

An X-ray should be made in all instances where the clinical evidence indicates loss of function to any degree. The picture must not be accepted as negative evidence under two special conditions, in children and if only one view has been taken. In children where clinical evidence indicates that a fracture exists an examination under an anesthetic will clear up the diagnosis and prove the existence of a fracture.

Unfortunately in the past there has been a stop-gap diagnosis which has satisfied the indifferent surgeon—sprain. This convenient, almost meaningless expression, has caused distress to the patient and

*Presented before Oklahoma City Clinical Congress, October 29, 1933.

financial retribution on the part of the doctor.

It is unfortunate that so few seem conscious of the relative tensile strength of the ligaments about the joints and the small bony prominences to which they are attached. When subjected to strain the bone breaks before the ligaments sever or even tear. Occasionally one sees a severed triceps tendon but a proven sprain about the elbow is rare.

*Anatomic knowledge, physical principles and human patience must be utilized to obtain good end results.*

Anatomic knowledge to be utilized is divisible into two groups:

1. That which is essential for diagnosis.
2. That which is necessary for treatment.

The first of these may be subdivided further into two groups:

a. The anatomic information which is gained by proper interpretation of X-ray pictures.

b. The anatomic forces which produce and maintain deformity.

The first of these subdivisions specifically relates to the information which may be obtained from the X-ray, more particularly during the early years of life when so large a percentage of elbow fractures occur.

Even though a great amount of work has been done since Poland's epoch making study was made there is still too little attention devoted to using the information which we have relative to the epiphyses.

Before discussing the subject further let me remind you that too much stress is placed upon X-ray pictures. It should be accepted as axiomatic that the X-ray in early childhood cannot possibly give the needed information. This is due to the fact that the epiphyses have not ossified, therefore a fracture will not be demonstrated by a picture.

A brief review of a study which I made prior to 1921 on the normal elbow will not be out of place in this discussion. The essential factors are these; there are three epiphyses constantly found in the lower end of the humerus, the capitellum, the trochlear and the internal epicondyle.

"The first epiphysis to appear roentgenographically is the capitellum. The earliest record of its appearance is at seventeen months. Up to the age of five years the capitellum is the only epiphysis which is evident roentgenographically. At some time during the fifth year the epiphysis for the head of the radius may appear. This is not constant as during the sixth year of life the shadow of this epiphysis is often absent. During the seventh year, the epiphysis for the head of the radius is constantly found."

"The internal epicondyle appears in some instances at this age, but it is not constant."

"An appreciation of the relationship of the internal epicondyle to the shaft will be helpful in making the diagnosis of epiphyseal 'separation.' The internal epicondyle appears close to, and almost continuous with, the internal oblique line of the shaft of the humerus."

"At eight years of age we have noted a beginning olecranon and trochlea. These epiphyses are not constant at this time. We are therefore forced to conclude that the trochlea does appear as early as the eighth year and is constantly found by the tenth year except in cases of underdevelopment."

"The capitellum which is the first to appear develops from within outward, and by the tenth year occupies the base of the shaft of the humerus from the middle of the olecranon fossa outward."

"During the eleventh year of life we have noted frequently a union between the capitellum and the trochlea, but no ossification of the epiphysis and the diaphysis. This is not, however, a constant finding, as we find the trochlea and the capitellum still ununited in some instances at twelve and thirteen years."

"During the twelfth year the capitellum and trochlea have in some cases not only completely developed but the epiphyseal line between them has become obliterated."

"The olecranon and trochlea are the most variable epiphyses at this age. The trochlea is represented in some persons by a small shadow; in others, it has, as previously stated, become united to the shaft."

"The olecranon epiphysis appears as early as the eighth year in some instances as a small elliptical mass widely separ-

ated from the ulna. This finding is rare. Occasionally this epiphysis is manifest at nine years."

"During the tenth year there are at times two distinct shadows in the region of the olecranon epiphysis. By this time this epiphysis is constantly found."

"At fourteen years of age, we find complete development and union of the epiphyses to their respective shafts, except in the case of the internal epicondyle. In one instance, we have noted that this also has occurred"

"During the fifteenth, sixteenth and seventeenth years, complete development and union to the shaft of the internal epicondyle is noted, the internal condyle alone remaining united at seventeen years."

"All the texts refer to the external epicondyle as appearing between the twelfth and sixteenth years. Our observations have led us to believe that it is not constant as a separate epiphysis. Its presence is the exception rather than the rule."

"There are certain constant factors in the appearance of the normal elbow joint. Some of these can be expressed by a number of lines which the author utilized in his work."

"The author believes that with a clear knowledge of the normal appearance of the elbow, and the relationship of the articular portion of the humerus and the ulna, many errors in diagnosis can be eliminated; and furthermore, it can be definitely stated from the roentgenogram that there is an existing deformity. If these things are possible, certainly they need more general adoption, because thereby a source of error will have been corrected."

"The position of the capitellum is most important. With the elbow flexed to a right angle, a lateral view of the elbow shows the capitellum occupying the sigmoid cavity. In early life, there seems to be a wide separation between the articular surface of the capitellum and the great sigmoid cavity, but with growth the capitellum occupies the entire cavity and is closely approximated to the sigmoid cavity."

"A plane passed through the middle of the long axis of the shaft of the humerus, prior to about the ninth year, passes behind the posterior border of the capitellum; after this period the plane bisecting the shaft of the humerus has approximately two-thirds of the lower epiphyses anterior to it."

"The plane of the anterior limit of the shaft of the humerus shows at least one-half of the capitellum anterior to it."

"A plane at right angles to the base of the capitellum and bisecting it intersects the plane through the middle of the long axis of the shaft at an angle of about 130 degrees."

"When the forearm is extended on the arm and supinated a plane passed through the middle of the long axis of the humerus is intersected by a plane through the middle of the long axis of the ulna at an angle of approximately 170 degrees."

"The olecranon occupies the entire olecranon fossa."

(Isidore Cohn, Lewis's Practice Surgery, Vol. II Chap.3).

The second subdivision of the anatomic knowledge essential for diagnosis is accurate information relative to the forces which are conducive to the production of deformity. This is not an academic matter but an intensely practical problem. How can one interpret loss of function, attitude, and actual deformity unless the surgeon treating the patient is able to clearly visualize the origin and insertion as well as the action of the muscles in the vicinity of the injury? Deformity as we know is due to the fracturing force, gravity and muscle action.

Why do we admire our surgical predecessors so much? I think largely because of their accurate anatomic knowledge which enabled them to approach the operative field directly and with the least injury to important structures.

Every sign and symptom following an injury is present because of a definite anatomic change. It is the proper interpretation of the subjective and objective phenomena which makes for correct diagnosis. Further, it is essential to remember that conservative measures based on anatomic knowledge will produce satisfactory results.

***Methods of manual reduction are valuable in direct proportion to the accuracy of application of forces to counteract the deforming factors.***

I have repeatedly stated that I believe that there is too much operating in fractures. This is due to the fact that funda-

mental principles of anatomy and physics are neglected. Unless one considers the origin and insertion of muscles in the vicinity of the fracture he cannot intelligently reduce the deformity. Many of us overlook the fact that loss of function, as well as deformity, are due to lack of harmony produced by the unopposed contraction of the groups of muscles which remain attached above and below the site of the fracture. If we are to be successful in reducing the deformity following fractures our force or pull must be applied in such a way that it will directly oppose the contracting force.

The treatment varies according to the location of the fracture. In such a presentation one must limit the varieties to be discussed. Briefly I will discuss the following: supracondylar, external condylar, internal condylar, head of the radius and fractures of the upper third of the ulna.

Supracondylar fractures are of two types—the extension and the flexion variety.

In the extension type the position of greatest stability is hyperflexion because the triceps act as a natural splint, and there is relaxation of all of the flexors which have a tendency to bring the distal fragment into the bend of the elbow.

In fractures of the internal condyle, it is desirable to have not only hyperflexion, but also pronation of the forearm.

This is true because contraction of muscles attached to the shaft, particularly the brachioradialis, tends to supinate the forearm. The supinator brevis by its contraction following fractures of the internal condyle tends to diminish the carrying angle.

*In fractures of the external condyle,* the position of greatest stability is one of hyperflexion and supination, for these reasons:

Pronation would allow the pronator teres to pronate the forearm and thus pull the external condyle away from the shaft. In supination the pronator is opposed by the artificial force of the bandage, and contraction of the supinator brings the external condyle into closer contact with the humerus.

Reduction having been accomplished and the proper dressing applied, the difficulty often arises of keeping the bandage from slipping from the elbow. It has been found useful to have a conical bag made, the apex down. In such a bag the hyperflexed forearm and arm are slipped and the whole is supported by tapes around the neck.

The after care is too important not to have a few words said about it.

Prolonged hyperflexion necessarily results in contractures of the flexor muscles. Therefore, it is essential to diminish the flexion as soon as it is safe. This may be begun about the tenth day. At each dressing contrast bath, massage and active motion are given. The range of motion should be limited by evidence of pain. Pain is indicative of injury to the part. Flexion and extension within a given arc should be done once at each dressing during the early after care of these patients.

Plaster molded splints should be used.

A source of annoyance is the tendency toward internal rotation of the arm as a whole. This is due to the position of hyperflexion which is accompanied by an internal rotation of the shoulder. In order to overcome this tendency, one must insist on rotation outward of the shoulder at the very earliest moment. Shoulder movement will not disturb the position of the fracture of the elbow if the bandage is snug. Some may consider these statements highly theoretical. To them, I commend neglect of this precaution, and they will later be convinced of the truth.

During the first twenty-four hours it is urgent that the part be observed closely. Volkman's ischemia may result from a tight bandage which has been applied for as short a period as six hours. A case which was observed by me resulted from the bandage remaining on for twelve hours.

*The application of the bandage* in the position of hyperflexion requires special care. All bandages should include the hand. If the bandage does not include the hand secondary swelling of the hand will be greater than that of the forearm, and any form of gauze sling around the wrist will cause a great constriction at this level. This will create a vicious circle. This difficulty can be overcome by bandaging the hand as well as the forearm and arm. A rubber tube used as a sling is preferable to a gauze bandage, because the elasticity of the former allows for relaxation if swelling occurs.

After the fourth week it is very important that active as well as passive

movement be encouraged. Massage and resistive exercise contribute in a large measure to a perfect result.

A few cases of the supracondylar fractures, which are of the flexion variety, cannot be maintained in flexion as the lower fragment is pulled upward and backward by the triceps.

We read from time to time about putting wire and pins through the olecranon in these fractures in children. The use of any form of surgery about the epiphyses should be avoided if possible. Trauma favors premature ossification and a consequent permanent shortening of the arm.

What causes ankylosis in fractures about the elbow? The persistence of a change in the axis of one or more of the articular surfaces, or a displaced free fragment which acts as a wedge between the articular surfaces.

Traumatic ankylosis of the elbow is not an uncommon sequel of fractures about the elbow. There are certain type groups that will regularly result in partial or complete ankylosis unless definite effort is made from the onset to avoid disability.

Group 1. Fractures in children with displacement of an epiphysis.

Group 2. Supracondyloid fractures, either comminuted or simple in which a vicious union or bony ankylosis has resulted.

Group 3. Fractures with displacement or a free fragment, which acts like a foreign body wedged between the articular surfaces. In this group will be considered fractures of the coronoid process, the internal condyle in adults and children and fractures of the head of the radius.

Group 4. Fractures of the ulna, particularly the upper third of the shaft.

Group 1. When seen immediately after the accident it is imperative that the displaced epiphysis be restored to its normal bed at once. A proper knowledge of the normal position is essential for the accomplishment of the above.

Failure to reduce the deformity means limitation of motion and alteration of the carrying angle. It is not the ideal thing to remove an epiphysis, but when function of the joint is at stake it is justifiable.

Group 2. The second group of cases is those in which there has been a supracondyloid fracture, where angular deformity has resulted.

The change in the axis of the lower fragment alters the relationship of the epiphyses of the humerus to the sigmoid cavity.

It is easy to understand the limitation of extension as we note the obliquity backward of the distal end of the humerus. The olecranon meets an obstruction before the extension is accomplished, and it no longer can reach the olecranon fossa, but is stopped by the lower end of the humerus. Flexion is impossible because the coronoid probably strikes against the lower end of the humerus before it can reach the coronoid fossa.

In this group partial ankylosis is preventable by immediate reduction:

There must be complete restoration of the axial plane of the shaft and epiphysis, otherwise a limitation of motion will result.

Group 3. This group comprises fractures with displacement of a free fragment, which acts like a foreign body wedged between the articular surfaces. Fractures of the coronoid process, the internal condyle in adults and children, and fractures of the head of the radius are included in this group.

The free fragment should be removed when it is impossible to replace it and maintain it in position. As a rule removal does not cause impairment of function. In some cases perfect results have been obtained by removal.

Group 4. This includes fractures of the ulna, particularly the upper third of the shaft.

1. Reduction of the deformity in fractures of the upper third of the ulna is essential. If this is not accomplished the ulna acts as a pendulum, swinging as a rule away from the midline, stretching the internal lateral ligament and thus diminishing the carrying angle. More than this happens. Flexion of the upper fragments, which results from contraction of the brachialis anticus, added to the change in the axis of the upper portion of the shaft, alters the relationship of the sigmoid cavity of the olecranon and the articular portion of the humerus. The result of this, if not

corrected, is a limitation of flexion of the elbow.

2. When the deformity is reduced no limitation of motion results.

3. If it is not possible to maintain reduction, open operation is advisable.

The management of injuries about the elbow requires the most careful attention to details if our end results are to be better.

1522 Aline Street.

## WHAT EVERY WOMAN DOESN'T KNOW—HOW TO GIVE COD LIVER OIL

What Every Woman Doesn't Know is that psychology is more important than flavoring in persuading children to take cod liver oil. Some mothers fail to realize, so great is their own distaste for cod liver oil, that most babies will not only take the oil if properly given but will actually enjoy it. Proof of this is seen in orphanages and pediatric hospitals were cod liver oil is administered as a food in a matter of fact manner, with the result that refusals are rarely encountered.

The mother who wrinkles her nose and "makes a face" of disgust as she measures out cod liver oil is almost certain to set the pattern for similar behavior on the part of her baby.

Most babies can be taught to take the pure oil if, as Eliot points out, the mother looks on it with favor and no unpleasant associations are attached to it. If the mother herself takes some of the oil, the child is further encouraged.

The dose of cod liver oil may be followed by orange juice, but if administered at an early age, usually no vehicle is required. The oil should not be mixed with milk or the cereal feeding unless allowance is made for the oil which clings to the bottle or the bowl.

Mead's 10 D Cod Liver Oil is made from Mead's Newfoundland Cod Liver Oil. In cases of fat intolerance the former has an advtnage since it can be given in 1-3 to 1-2 the usual cod liver oil dosage.

## OVARIAN THERAPY: RELATIONSHIP OF FEMALE SEX HORMONE TO HEMOPHILIA

The work of Jacob Brem and Jerome S. Leopold, New York (Journal A. M. A., Jan. 20, 1934), does not support the theory of the close relationship of the female sex hormone to hemophilia: 1. They have not been able to demonstrate the presence of the estrogenic substance in the urine of normal males. If the female sex hormone holds hemophilia in abeyance, it should be present in the urine of all normal males rather than in isolated cases. 2. The commercial estrogenic substance employed by the authors, of known potency, failed to reduce the coagulation time of the blood or stop the several hemorrhages in their hemophiliac patient. It would seem that symptomatic treatment and blood transfusions are still the methods of choice in hemophilia.

## FOOD POISONING

J. C. Geiger and J. P. Gray, San Francisco (Journal A. M. A., Sept. 23, 1933), define food poisoning as that clinical syndrome resulting from the ingestion of food contaminated by organisms of a specific type, including the parathyphoid-enteritidis groups and certain of the staphylococci. They report on three outbreaks investigated by the San Francisco Department of Public Health. The first was believed to have been due to meat (beef) contaminated by Bacillus enteritidis; the second was caused, in all probability, by tomato sauce and turkey contaminated by Bacillus paratyphosus B; the third was probably due to the cream filling in chocolate eclairs, contaminated by a heavy yellow pigment-producing staphylococcus. The authors outline the investigative procedures, emphasizing the parts played by epidemiology and the laboratory. Practices carried out in San Francisco are compared with those of other major cities, as determined by questionnaire methods. The control of food poisoning is not an unachievable goal, but present-day methods must be more intensively and extensively applied. Three avenues of approach include: (1.) supervision of food handlers (human carriers). (2.) food inspection service (physical plant, methods of preparation, holding and serving and regulation of rodents and other animal carriers), and (3.) health education through an organized program and personal contact of the departmental personnel and the public.

## TRAUMATIC INJURIES OF THE UPPER URINARY TRACT FOLLOWING INSTRUMENTATION

R. B. Henline, New York (Journal A. M. A., Jan. 20, 1934), points out the possibility of rupture of the ureter following manipulation must always be considered. It is more common than one would be led to believe. Many such cases go undiagnosed and heal without surgical intervention. Severe postcystoscopic reactions may be the result of minute ureteral injuries with a small amount of urinary extravasation. Gentle and careful intra-ureteral manipulation, particularly in a pathologic ureter, should always be the aim of the urologist, The author reports nine cases of ruptured ureter, all following ureteral manipulation and injury. Three patients required surgical drainage alone; two were subjected to nephrectomy because of badly infected kidneys; the remaining four recovered with palliative treatment. Experimentally, it was found impossible to rupture the normal ureter of the dog by forcible dilation with a large bougie during cystoscopy. Retrograde pyelography with forced syringe injections, as well as excretory urography, showed the ureter still to be normal. In three dogs the left ureters were forcibly ruptured and torn with a silver wire. Retrograde pyelography was then done to trace the extent of the extravasation. This was followed by excretory urograms and a similar extravasation occurred. In these ruptures surgical treatment was indicated because the excreted urographic fluid mixed with urine extravasated outside the urinary tract. The ureter of one dog punctured by a fine wire stylet failed to show any extravasation of fluid by an intravenous urogram. From a critical analysis of experimental and clinical data, excretion urography would seem to indicate accurately the existence and extent of gross injury or damage to the ureter. Also careful study and correct interpretation of the urograms are an invaluable guide to the further intelligent surgical conduct of the conditions arising from such injury.

# THE JOURNAL
OF THE
**Oklahoma State Medical Association**

Issued Monthly at McAlester, Oklahoma, under direction of the Council

VOL. XXVII MARCH, 1934, No. 3

DR. L. S. WILLOUR.....Editor-in-Chief
McAlester, Oklahoma.

DR. P. P. NESBITT.....Associate Editor
Medical Arts Building, Tulsa, Okla.

Entered at the Post Office at Muskogee, Oklahoma, as second-class mail matter July 28, 1912.

This is the official Journal of the Oklahoma State Medical Association. All communications should be addressed to The Journal of the Oklahoma State Medical Association, 203 Ainsworth Building, McAlester, Oklahoma. $4.00 per year; 40c per copy.

The editorial department is not responsible for the opinions expressed in the original articles of contributors.

Reprints of original articles will be supplied at actual cost provided requests for them is attached to manuscripts or made in sufficient time before publication.

Articles sent this Journal for publication and all those read at the annual meetings of the State Association are the sole property of this Journal. The Journal relies on each individual contributor's strict adherence to this well-known rule of medical journalism. In the event an article sent this Journal for publication is published before appearance in the Journal the manuscript will be returned to the writer.

Failure to receive The Journal should call for immediate notification of the editor, 203 Ainsworth Building, McAlester, Oklahoma.

Local news of possible interest to the medical profession, notes on removals, changes of addresses, births, deaths and weddings will be gratefully received,

Advertising of articles, drugs or compounds unapproved by the Council on Pharmacy of the A. M. A., will not be accepted.

Advertising rates will be suppied on application.

It is suggested that wherever possible members of the State Association should patronize our advertisers in preference to others as a matter of fair reciprocity.

PRINTED BY HOFFMAN-SPEED PRINTING CO., MUSKOGEE


## *EDITORIAL*

### SUPPORT OUR ADVERTISERS

During the past two years we have suffered from a decrease in our income from advertising and this of course causes a constant drain on the Association resources. Every effort is being made to maintain the quality and size of the Journal but to do this we must have more advertising, as the difference between our income from this source and the cost of publication is too great at this time for us to stand over an extended period.

Will each member look over the field and find some more advertisers, speak to the detail man who visits your office and explain to him that his employer cannot expect the support of the members of our Association unless he helps to support our Journal by using its pages for advertising purposes.

Let each member buy from the firms whose "ad" appears in the Journal.

### WHY NOT MORE COMMITTEES ON "HIGH COSTS?"

Now that the Committee on the Cost of Medical Care has gone on into the limbo of the past, we may well wonder why in the world the family's doctor bill was picked out for all the ado and to-do, and nothing done about all the other, bigger bills.

It would seem only natural, at least, that an investigation into the family doctor bill should be followed by an inquiry into the family automobile bill, usually about twice or three times as large. If the American "white-collar" class are suffering so terribly under the doctor bill, think of their agony under the automobile bill. But our statesmen at Washington are not appointing any committee to tour the land, at public expense, to probe the *high cost of automobile care.*

Then there are other "high costs." Even the medical-cost committee put the family's tobacco bill at about the same figure as the doctor bill. So which one is to be reduced? Why, the doctor bill, of course. The logic probably is that it is natural for smoke to go up, while medicine always goes down.

Next we find that the family bill for candy, soda, ice cream, and chewing gum also figures up to about the same total as the bill of the physician who is supposed to make the system do its duty again after all the above have clogged it to a standstill. The difference is that the candy, soda and gum have to be paid for in spot cash, while the doctor's gentle reminder is tucked away in a pigeonhole and forgotten. So what? Reduce the doctor's bill, naturally.

What about committees on the high cost of silk stockings, underwear, and pajamas, high cost of movies, vaudeville and radios, high cost of hair bleaches, face packs and permanents? Worst of all is the high cost of supporting politicians at Washington and the various state capitols and city halls who make the high cost of government higher and higher every year.

These are the people who seem able to

discover only one "high cost"—the cost of medical care! Let us have just one more invesigation, this one to reckon how much it would cost the country to be without medical care! The "high cost of our medical care would then stand out, clear as daylight, as the most economical expense America has today. (Copied from New York State Journal of Medicine).

## THE WORK CONTINUES

The following is a list of the members of the faculty for the completion of the Post-Graduate Medical Course, which was started in the Northeastern part of the State, and had to be discontinued on account of the action of the Board of Regents of the University:

Week of February 12th—Dr. George L. Waldbott, Detroit, Mich.

Week of February 26th—Dr. J. Victor Greenebaum, Cincinnati, Ohio.

Week of March 5th—Dr. Clifford J. Barborka, Chicago, Ill.

Week of March 12th—Dr. F. J. Hirchboeck, Duluth, Minn.

Week of March 19th—Dr. Cyrus C. Sturgis, Ann Arbor, Mich.

Week of March 26th—Dr. Max Levy, Memphis, Tenn.

We are very glad to announce that we will be able to complete this program, the administrative part being financed by the Oklahoma State Medical Association.

It is very gratifying to know that the regular medical profession of the State is standing so squarely behind this movement and thereby defying petty political procedures, which would use its influence to hamper this very important work.

## THE MAY MEETING

Personal communication has been handed to the chairmen of all committees, requesting that they submit all reports at an early date, so that they can be published in the April issue of the Journal, and it is hoped that they will conform with this request. This must be done in order that the members of the House of Delegates may have an opportunity to peruse these reports and intelligently discuss them at the State meeting.

It is also imperative that anyone wishing to present a paper before any of the sections, communicate with the section officer as soon as possible, so that the program may be completed for publication.

The Tulsa County Medical Society has made all necessary committee appointments and the committees are functioning at this time. They will appreciate everyone's cooperation so that this may be made a well organized meeting.

Below you will find an outline of the Tulsa County Committees, and should you have any business with any of these departments you will now know with whom you should communicate:

General Chairman, Dr. A. W. Pigford.

Registration and Badges, Dr. David V. Hudson.

Finance, Dr. Carl F. Simpson.

Entertainment, Dr. B. L. Branley.

Hotels, Dr. C. H. Haralson.

Golf, Dr. James Stevenson.

Scientific Exhibits, Dr. R. C. Pigford.

Publicity, Dr. W. Albert Cook.

Medical Reserve Corps Dinner, Dr. P. P. Nesbitt.

## *Editorial Notes—Personal and General*

DR. E. E. CONNER, formerly of Erick, has opened offices in Mangum.

DR. WENDELL LONG, Oklahoma City, who has been ill for the past several weeks is reported improved.

DR. F. P. VON KELLER, Ardmore, is reported recovering from the effects of a dislocated shoulder which he received in late January.

DR. LeROY LONG, Oklahoma City, spoke before the Craig County Medical Society, February 6th, on the subject of "The Bile Tract Area."

DR. EARL D. McBRIDE, Oklahoma City, presented a paper at the Pan-American Medical Association which met in Caracas, Venezuela in March.

DR. C. E. NORTHCUTT, Ponca City, is President of the Ponca City Chamber of Commerce and was elected the most useful citizen for the year 1933.

DR. WILSON H. LANE, Ada, has announced his candidacy for Mayor and Commissioner of Public Justice and Safety, subject to the city primary, in March.

DR. McCLAIN ROGERS, Mayor of Clinton, was honored as that city's most useful citizen during 1933, at a joint meeting of the Rotary and Kiwanis clubs, in February.

DR. C. B. HILL, Guthrie, one time superintendent of the Western Oklahoma Hospital at Supply, has been appointed county physician, Logan County, to succeed Dr. Robert Allen.

DR. E. ALBERT AISENSTADT, Picher, spoke on the management and treatment of burns before the Okfuskee-Okmulgee County Medical Society, which met in Henryetta in February.

DR. AND MRS. HOWARD S. BROWNE, Ponca City, spent two weeks in February, in New Orleans, where Dr. Browne attended an Eye, Ear, Nose and Throat specialists's clinic, at Tulane University.

DR. NED R. SMITH, President of the Tulsa County Medical Society, gave a talk on "Tulsa's Health Problems," in February. This talk was sponsored by the Auxiliary of the Tulsa County Medical Society.

The Nurses' Training School at the Albert Pike Hospital was discontinued March 1st. Of the thirteen students enrolled in the classes, seven have reported to the University Hospital, and the other six to the Wesley Hospital.

DR. CHARLES M. PEARCE, McAlester, opened offices at 117½ North First Street in March. Dr. Pearce spent the month of February in Memphis, Tenn., where he attended the Campbell Clinic and the Mid-Southern Post-Graduate Assembly.

HUGHES COUNTY MEDICAL SOCIETY met at Calvin, February 9th, for luncheon and a business session. Dr. R. B. Ford, Holdenville, read a paper on "Diseases of the Gall Bladder." The Society will meet at Allen for their March meeting.

MUSKOGEE COUNTY MEDICAL SOCIETY met in the County Court House Tuesday, February 13th, at 7:30 for a business session, and at 8:30 for a non-medical program. A lecture was given by Dr. J. A. Walker, Shawnee, on "Pyramids of Egypt."

DR. E. S. FERGUSON, Oklahoma City, was elected chairman of the Oklahoma Section of the American College of Surgeons at their annual meeting in Oklahoma City in February. Dr. A. W. Pigford, Tulsa, was elected Secretary and Dr. LeRoy Long, Oklahoma City, Counselor.

CARTER COUNTY MEDICAL SOCIETY presented the following dinner program at Ardmore, March 5th, at 6:30 p. m.:

Invocation—Rev. E. M. Whitwell.
Address of Welcome—Earl A. Brown.
Introduction of Guests—Dr. Geo. E. Johnson.
Music—Douglas High School Quartette.
Chicken Dinner.

Benefits of Organized Medicine—Dr. L. S. Willour, McAlester.

Peptic Ulcer—Dr. Arthur W. White, Oklahoma City.

Toxic Goiter—Dr. LeRoy Long, Oklahoma City.

## DR. MAIER, CHIEF BACTERIOLOGIST

The Merck Institute of Therapeutic Research, Rahway, New Jersey, ainounces the appointment of Dr. Eugene Maier as Chief Bacteriologist.

Dr. Maier is a graduate of the University of Tuebingen, Wuertemberg, Germany, and completed his studies at the University of Erlangen, Germany.

Dr. Maier was associated with the Rockefeller Institute of New York as Research Assistant from 1926 to 1930. Since 1931, up to the time of becoming associated with Merck & Co., Inc., Dr. Maier has been at Bellevue Hospital, New York, in the department of pathology, as bacteriologist for the Tuberculosis Division of Columbia University.

PITTSBURG COUNTY MEDICAL SOCIETY met at McAlester, February 16th, Enloe Hotel, for their annual banquet. Dr. T. H. McCarley, President of the State Association, McAlester, and Dr. J. E. Hughes, Shawnee, were the guests of honor. The following program was given after the dinner:

Call to Order—Dr. E. H. Shuller, President.
Invocation—Dr. R. K. Pemberton.
Music—Miss Mary Jo Smith Quintet.
Address—Dr. T. H. McCarley.
Reading—Miss Margaret Echols.
Music—Miss Mary Jo Smith Quintet.
Pictures—Travelogue—Dr. J. E. Hughes.
Adjournment.

## MUSKOGEE ACADEMY OF MEDICINE

The Muskogee Academy of Medicine was organized on February 9, 1934, at Muskogee, Oklahoma, with twenty active members. President, Dr. Chas. E. White; Vice-President, Dr. J. G. Rafter; Secretary, Dr. S. D. Neely. Board of Directors: Drs. J. Hutchings White, I. B. Oldham, C. V. Rice, F. W. Ewing and L. S. McAlister. The object of this organization is the promotion of scientific medicine in the territory of Muskogee. A program has been set for Thursday, April 5, 1934, as follows:

Dr. A. B. Chase, Oklahoma City, (1.) "Pain Around the Heart"; (2.) "The Thyrotoxicotic Heart"; (3.) "The Heart In Relation to Anesthetics and Surgical Procedures."

Dr. John Zahorsky, St. Louis, Missouri, two subjects unannounced, on pediatrics.

Dr. Willis C. Campbell, Memphis, Tennessee, (1.) "Fractures in and About the Neck of the Femur"; (2.) "Practical Application of Orthopaedic Principles."

These three will be guest speakers of the meeting. The meeting will be at the Baptist Hospital, Muskogee, Oklahoma, beginning at 1:00 p. m., April 5, 1934, and continue until finished. Lunch will be served at 6:30 p. m., after which there will be a round table discussion. The medical profession is cordially invited to attend this meeting. There will be no charges except for lunch, probably fifty cents, to members of the profession outside the city limits of Muskogee.

## NOTICE

There will be a Mental Hygiene Conference held April 12, 13, 1934, at the Y. W. C. A., 320 West First Street, Oklahoma City, under the auspices of the Oklahoma State Nurses' Association. An extensive program has been arranged, featuring the authorities both from the medical profession and the nursing profession, and it is hoped that as a result of this meeting there may be organized in this State a Society for mental hygiene.

The physicians of the State are invited to attend.

## ABRAHAM LINCOLN BLESH

Drawn shades, gray shadows, the odor of flowers, the sound of subdued sobs—and another great soul has passed. For thirty-three years his busy fingers wielded the scalpel with cleverness and skill. For forty-five years his counsel and advice were sought by those who laid their lives in his hands.

Dr. Blesh was born of Swiss parents who moved from their native Berne to the Allegheney Mountains of Pennsylvania and founded an American dynasty. He was born in 1866, the year following the Civil war. During this stormy time of reconstruction the West was beckoning with open arms, and when he was five years of age his father left the mountains and brought his family to a prairie farm in Kansas where each day was begun with family prayer. The children were taught to be honorable, fairminded, and straightforward. They were also taught that every living soul is entitled to struggle for success in a free and open field where his abilities may reach their proper level. Under the influence of a kindly country doctor, the boy's ambitions were stirred and he graduated from Northwestern University Medical School, worked his way across to Europe by securing an appointment as ship's doctor, spent a year in Vienna, and returned to Kansas, where he practiced in a small town for two and a half years. He moved to Guthrie, Oklahoma, in 1893, where for ten years he continued in general practice, then realized the necessity for further training which he obtained by spending a year in Johns Hopkins University under Dr. Howard Kelly. In 1911 he moved from Guthrie to Oklahoma City, where he founded the Oklahoma City Clinic and Wesley Hospital, which institutions have continued to grow until the present time. He rendered distinguished service during the World war, having been Chief of the Surgical Department at Fort Sam Houston. He has been a member of the faculty of the School of Medicine in the University of Oklahoma since 1912, and his life has been one of great activity even up to the past sixty days. Literally, he has died in the harness.

Those who have known him for many years are unamimous in saying that he was a friend who could be relied upon under any and all circumstances. Those of us who have come to know and respect him during the past few years feel that his outstanding characteristic was a sense of fairness and a willingness to meet competition in the open and without fear. His comments in meetings were always keen and constructive; his loyalty to principles and to truth as he saw it could never be doubted; and his scorn for unfair practice was of that white hot variety which can only be admired.

A great trail was blazed across the history of Oklahoma by this man. A trail of influence, of inspiration, of accomplishment. The young men have lost a friend, the old ones have lost a colleague, and the world has lost a leader. May the sunny clime of immortality open before him like a soft greeen valley, receiving and caressing his soul and inviting it to lie down for the rest it so richly deserves.

—Basil A. Hayes, M.D.

## NECROLATRY

The Committee on Necrology of the Muskogee County Medical Society desires to offer the following resolution for the Society's adoption in commemoration of its devotion and respect of Doctor Samuel Erskine Mitchell.

First: An expression of our gratitude of having had the privilege of an intimate association of such an earnest, high class physician.

Second: To voice the regrets of true and loyal friends.

Third: To extend our sincere sympathies to his family and legion of friends.

J. G. RAFTER, Chairman,
J. T. NICHOLS,
S. J. FRYER.

## SAMUEL ERSKINE MITCHELL

1872—1934

Doctor Samuel Erskine Mitchell, son of S. W. Mitchell and Sophonia Dickson, was born at Dickson, Tennessee, on July 6th, 1872. He has six living brothers, two sisters deceased, one sister living. He moved to Hoyt, Indian Territory, on October 12, 1897, practicing medicine for one year; he located at Brooken, Indian Territory, in 1900, where he remained until 1904. He was graduated at the Medical College of the University of Nashville in 1900. He moved to Stigler, Indian Territory, in 1904 where he remained until 1918. He was married to Minnie Forrester, August 8, 1900. From this union there are two children, Rheta (Mrs. John Caldwell) of Muskogee, Oklahoma, and Samuel Eugene Mitchell of Oklahoma City, Oklahoma. In 1918 he entered the United States Army Air Service and was stationed at San Antonio (Kelly Field), Texas, where he remained eighteen months. He was discharged at Camp Pike Arkansas in August, 1919. He returned to Stigler, Oklahoma, and remained one year. He moved to Muskogee, Oklahoma, where he was in the practice of eye, ear, nose and throat for one year. He entered the employ of the United States Veterans Bureau when the hospital was opened in Muskogee, Oklahoma, in 1923, and remained here until his death. He was chief of the eye, ear, nose and throat department of this hospital. Doctor Mitchell was secretary of the Haskell County Medical Society for many years and served faithfully in this capacity, and as a delegate to the Oklahoma State Medical Association. He was president of the Muskogee County Medical Society in 1927. He was very active in the American Legion, and was a member of the 40 and 8. He was examiner for the United States Army as Air pilot examiner for many years. Doctor Mitchell was ever active in organized medicine, distinctly progressive in his work and well loved both by the medical profession and patients he came in contact with. He was a Lieutenant-Colonel in the Medical Reserve Corps of United States Army. He died at his home, 2429 Boston Avenue, Muskogee, Oklahoma, on February 23, 1934.

## RESOLUTION OF THE KAY COUNTY MEDICAL SOCIETY

Whereas, our friend and fellow member, Dr. A. L. Hazen of Newkirk, Oklahoma, senior member of our Society, has been suddenly called from us; and,

Whereas, his loss is deeply felt by every member of this Society and by his legion of lay friends because, in thirty-four years of his practice in the medical profession, he has always exemplified the noblest of virtues in all his relationships; and,

Whereas, we join together to mourn the passing to his great reward of this public benefactor,—

Therefore, be it resolved by the Kay County Medical Society, at its regular session on February 16, 1934, that our sincere sympathy be extended to his beloved wife and his many friends.

The Kay County Medical Society.

C. E. Northcutt, President.

## ATYPICAL FORMS OF DRY PLEURISY. RADIOLOGIC AND CLINICAL STUDY

Samuel Brown, Cincinnati (Journal A. M. A., Jan. 20, 1934), observes that, while the radiologic method has greatly improved diagnostic accuracy in pleuritic disorders, its chief function in most cases is that of confirming the clinical and physical observations. However, there are certain atypical forms of pleurisy: the interlobar, the mediastinal, the paravertebral and the diaphragmatic, which are seldom diagnosed by the physical and clinical signs alone but may be recognized by the radiologic method, provided the proper roentgen technic is used. The roentgen technic consists in the study of the chest in both the anteroposterior and the lateral position. The pathologic processes that may involve the interlobar, mediastinal, paravertebral and diaphragmatic pleurae are the same as elsewhere in the pleura. The roentgen characteristics of dry fibrinous pleurisy depend on the region involved and the extent of the lesion. In the early cases one may find only a dense line corresponding in its position to the interlobar fissure; this is due to thickening of the visceral pleura. In more advanced cases one may find an elongated dense shadow that is more or less oval along the course of an interlobar fissure; this is due to a separation of visceral pleurae as a result of an accumulation of a fibrinous exudate. Frequently one may also find some involvement of the adjacent lung tissue. Abnormal shadows due to mediastinal or paravertebral pleurisy may show in the anterior view of dense shadow, which is usually narrow along the borders of the heart or spine. In the lateral position of the chest the abnormal shadow will be found to overlap the heart or spine, or both, depending on the extent of the area involved. In diaphragmatic pleurisy the diaphragm is found elevated and its outline is more or less irregular as a result of a fibrinous deposit. The symptoms and signs of dry pleurisy are the following: moderate indisposition, dry cough, slight elevation of temperature, little change in the respiratory and the pulse rate, moderate leukocytosis and no abnormal physical conditions (but, if present, they are not characteristic of any pleuropulmonary disease). With the exception of diaphragmatic pleurisy, there is no pain the chest. Such observations should lead the physician to suspect the presence of an atypical dry pleurisy.

## UROGRAPHY AS GUIDE TO SURGICAL INDICATIONS OF DIVERTICULA OF URINARY BLADDER

From the standpoint of the surgical indications, Robert H. Herbst, Chicago (Journal A. M. A., Jan. 20, 1934), believes that diverticula of the urinary bladder should be classified into (1) small neck retenion diverticula and (2) large neck nonretention diverticula. The retention types are found more commonly associated with fibrosis and bar formation at the bladder neck. The less common nonretention types are usually found associated with prostatic hypertrophy. The mechanism in the development of each variety is quite different. The powerful contractions of the small thick walled bladder stimulated by infection causes severe increased intracystic pressure, which may result in the formation of small orifice retention diverticula and serious renal damage from ureteral reflux. This mechanism is demonstrated both in animal experiments and in clinical cases. The roentgenologic study is of great value both in diagnosis and as a guide to surgical indications. Small and even moderate size nonretention diverticula do not require surgical attack other than the correction of the obstruction at the neck of the bladder. Practically all retention diverticula must be removed if one may hope to obtain a good functional result. Early correction of the milder forms of obstruction of the neck of the bladder, such as fibrosis and median bar, may prevent formation of diverticula of the bladder and serious renal damage.

## PRESENT STATUS OF BIOPSY

A. B. McGraw and F. W. Hartman, Detroit (Journal A. M. A., Oct., 14, 1933), state that a consideration of the interrelationships of the various aspects of the question of biopsy on which they have dwelt indicates clearly the ideal conditions under which they may be obtanied, namely, the tumor clinic, operating either as a separate hospital or as a complete unit of a general hospital in which the surgeon, pathologists and radiologists, backed by optimal equipment and freed to some extent from encumbrances of other work, may cooperate to give patients by far their best chance of a cure. At present, owing to the prohibitive expense of complete equipment, these ideal conditions exist in so few places that they are available to a relatively small proportion of all patients with cancer. Further consideration also suggests that there are enough hospitals with adequately trained pathologists, surgeons and radiologists suffciently accessible by modern methods of transportation to offer to a high proportion of patients with cancer, quick biopsy, adequate surgical treatment and, for many, adequate irradiation treatment. Where such facilities exist there is little excuse for making use of a delayed biopsy. There remain, howeved, far too many patients with cancer living where such facilities do not exist to disparage or condemn entirely the delayed biopsy. Its field of usefulness however, is limited, and it should never be restored to merely for the sake of establishing a diagnosis; i. e., never, without some plan for treatment mapped out by the physician and accepted in advance by the patient, should the diagnosis indicate a malignant condition.

# ABSTRACTS .. REVIEWS .. COMMENTS AND CORRESPONDENCE

## TUBERCULOSIS

Edited By
L. J. Moorman, M.D.
304 Osler Bldg., Oklahoma City

### The Treatment of Tuberculosis Cavities of the Lung. L. S. T. Barrell, Lancet, February 18, 1934.

The three stages of tuberculosis of the lung are infiltration, caseation and excavation. Prognosis depends on the degree of activity and not on the presence or absence of cavities. An acute tuberculous bronchopneumonia without cavity may have a worse prognosis than third-stage disease with cavity.

Clinically three types of cavity are recognized: (1.) The recent cavity with a ragged wall of necrotic tissue; (2.) the cavity lined with a fibrotic wall, but containing pus; and (3.) the dry cavity with a firm fibrotic wall. The so-called roentgenographic annular shadows must be considered cavities until proved otherwise. The presence of such a shadow in the absence of clinical symptoms and physical signs is not an indication for collapse therapy. The dry cavity with firm fibrotic wall does not respond well to collapse therapy and these cases do very well without such treatment. Experience teaches that life is prolonged by artificial pneumothorax in the early infiltrative and subacute fibrocaseous stages of tuberculosis of the lung, but that it is shortened by pneumothorax in the chronic fibrotic stage. The presence of a free pleura cannot be determined by X-ray and the only reliable test is needle-puncture. When pneumothorax is inapplicable, sand-bags on the chest should be used to supplement bed-rest. A weight of 40 pounds is not uncommon, and in one case the weight reached 82 pounds, applied at short intervals.

Conclusions: 1. A tuberculous cavity in the lung is a potential danger. The danger may be great or small.

2. Treatment of a cavity is not without danger, which is slight in some cases, great in others.

3. The patient should not be exposed to treatment which is more dangerous than the cavity.

4. The annular shadow often shown by radioscopic examination of tuberculous lungs is probably due to a cavity in the majority of cases. In the absence of any symptoms or signs other than those of radioscopy, this type of cavity is not an indication for any special treatment.

5. A dry cavity in a chronic fibrotic case is best treated by the same means as a chronic fibrotic case without cavity. Attempts to close the cavity by pneumothorax or thoracoplasty are usually unsuccessful and often shortens the life of the patient.

6. When a cavity is accompanied by much expectoration, special treatment is indicated, because the disease is very likely to spread and the prognosis is bad. Artificial pneumothorax should be tried first, and adhesions divided if necessary. Failing this, phrenic avulsion and thoracoplasty or apicolysis may be tried, but, if these methods are contraindicated, the lung should be rested by the application of sand bags to the chest wall. Apicolysis is more successful than a partial thoracoplasty.

7. In the acute case with cavity-formation, artificial pneumothorax is the best treatment. Failing this, the lung should be rested by sand bags. Phrenic avulsion and thoracoplasty are contraindicated.

---

### The Differential Diagnosis of Intestinal Tuberculosis. Harry Gauss, I. Singerman, and Louisa T. Black. American Rev. of Tuberculosis, Nov., 1933.

In this article the diagnostic problems are concerned only with intestinal tuberculosis as a manifest disease, and makes no attempt to include those many cases which are symptomless, in so far as the gastro-intestinal tract is concerned, although demonstrable lesions are evident postmorten.

In considering the direct diagnosis of intestinal tuberculosis the authors call attention to the fact that the underlying pathology is an ulcerative enterocolitis and that the psysiological response to such a pathological lesion is increased irritability of the small and large bowel and that any increased irritability is manifested by hypermotility. Hence, one of the most important and constant symptoms is a diarrhea with soft and unformed stools, often liquid and which may contain blood, pus or mucus.

The second most valuable and constant symptom is the abdominal pain, tenderness and rigidity which usually come on shortly after eating. This is pointed out as unquestionably the result of peritoneal irritation following on the ulcerative processes within the lumen of the bowel.

Certain constitutional signs result which are in excess to those explainable by the pulmonary lesion itself. These consist chiefly of elevation of temperature, leucocytosis, and certain digestive symptoms, as anorexia, nausea and cramps. After a careful evaluation of the afore mentioned signs and symptoms the X-ray becomes a most important single agent in establishing the diagnosis. The X-ray evidences are discussed in detail along with accompanying X-ray illustrations.

Finally, in summarizing, the authors conclude:

1. There are no pathognomonic signs in intestinal tuberculosis.

2. The high incidence of intestinal tuberculosis reported by pathologists includes a considerable number of terminal lesions and is to be differentiated from clinical tuberculosis which produces morbidity.

3. The common symptoms of intestinal tuberculosis are, diarrhea, abdominal pain, abdominal tenderness, abdominal rigidity and cramps after eating.

4. The diagnosis is suggested by the failure of any patient to make satisfactory progress when his pulmonary lesion is quiescent or improved.

5. The X-ray evidence of intestinal tuberculosis includes the presence of spastic filling defects in the ascending colon, hastened emptying time of the colon, dilatation and segmentation of the small intestine, iliac stasis, gastric retention.

6. When a person has some of the signs and symp-

toms and has some of the X-ray evidence mentioned, and is known to have pulmonary tuberculosis, then a clinical diagnosis of intestinal tuberculosis may be made.

7. However, in adults, in the absence of pulmonary tuberculosis, one would hesitate to diagnose intestinal tuberculosis.

8. In considering intestinal tuberculosis, it must not be forgotten that patients with advanced pulmonary lesions are susceptible to any and all of the various non-tuberculous conditions which are discussed in detail in differentiation.

9. In the authors' series of cases, intestinal tuberculosis was found principally in patients with far advanced pulmonary tuberculosis.

---

**Conservatism, The Keynote in the Treatment of Tuberculosis. C. H. Cocke, Annals of Internal Medicine, December, 1933.**

In this very excellent article the author first attempts to emphasize the fact that each case of pulmonary tuberculosis is an individual problem and that a thorough study from a diagnostic standpoint, followed by a critical analysis of the progress as observed over varying periods of time, must necessarily precede subsequent steps which are to be taken with a view of aiding nature in its ultimate arrest of the disease process.

As the author states, it is infinitely more important what the tuberculous patient does than where he does it. In reviewing and discussing the various mechanical means which are being more frequently employed, the author insists that the basic fundamental in the treatment is rest. The author beautifully points out the fact, well known to most phthisiotherapists, that an individual prognosis made with statistical data for its background only too often fails. At any time in the course of treatment of the various stages of tuberculosis from the incipient early activation, certain complications may arise to alter the course of pulmonary disease. With measures at hand and a decision as to which one to employ there may then arise certain unexpected difficulties which may cause a change in the plan of treatment. Questions that are continually arising may be wisely answered and competently acted upon only after thorough consideration of the acuteness of the infection, the period of known exposure or the massiveness of the infection, response to hygienic-dietetic measures alone, the presence or absence of cavities, the position and anatomical characteristics of these cavities and numerous other considerations which bear on the indications for institution of collapse therapy. Should collapse therapy be decided upon, the question then is not an easy one, for it then must be decided which of the various means is most applicable to the case at hand.

The whole of this article, when carefully read and studied, constitutes a most comprehensive survey of the problems which are met with in the general management of all stages of pulmonary tuberculosis.

---

## *ORTHOPAEDIC SURGERY*

**Edited by Earl D. McBride, M.D**
**717 North Robinson Street, Oklahoma City.**

**Intracapsular Fractures of the Hip. A New Device for Lateral Osteosynthesis. Myron O. Henry. J. Bone & Joint Surgery. Vol. XVI., No. 1, Jan., 1934.**

A rustless steel screw bolt has been devised for use in open reduction of intracapsular fractures of the neck of the femur and the author recognizes it as an improvement over other forms of fixation such as the Smith-Petersen nail. He makes moderate traction to both lower extremities of the patient upon an orthopedic table. Through a long lateral incision the trochanter is exposed. A Gigli saw is passed through the trochanteric fossa beneath the tendons of the obturators piriformis muscles. The trochanter is sawed off along the insertion of the gluteus medius tendon and retracted upward. When the capsule of the hip is incised, this approach gives a good view of the femoral head and neck along the axis of the neck. Interposed soft parts can be removed and the fragments brought into apposition by the screw traction of the table. The head of the femur is steadied by a tenaculum forceps, while a hole is drilled accurately into it along the axis of the neck. The screw-bolt is then introduced and drawn up tightly to secure efficient fixation. The capsule is sutured, the trochanter sutured and the fascia and skin closed in the usual manner. No external immobilization is needed, and the device can be removed through a small lateral incision when desired.

Since the author has tried this screw on only three cases it does not seem this would fully approve the efficiency of the device but Smith-Petersen has used a three cornored nail and other surgeons including Hey Groves of England have used metal fixation in selected cases. Most orthopedic surgeons think operative fixation is preferable to external fixation by plaster cases or splints.

---

**The Cystine Content of the Finger Nails in Arthritis. M. X. Sullivan and W. C. Hess. Washington, D.C. J. Bone & Joint Surgery, Vol. XVI., No. 1, Jan., 1934.**

This is a rather unusual article in which the clippings of finger nails were examined for the cystine content. The author found that by applying the Sullivan cystine method to different materials, i.e., foodstuffs, hormones, enzymes, etc., that the cystine content of the finger-nail clippings of six normal individuals varied from 11 to 13 per cent, with an average of 12, while one arthritic, diagnosed by his physician as a case of infectious arthritis, showed only 8.87 per cent.

On account of this variation in the finger nails of an arthritic, the authors studied 26 normal cases and 103 arthritics by analyzing the finger-nail clippings to determine the cystine content. Their procedure of analysis is as follows:

50 to 100 milligrams of finger-nail clippings were placed in a small acetylation flask, fitted with a ground-glass reflux condenser, together with 5 c.c. of 20 per cent hydrochloric acid. They give other details of their procedure which is quite intricate and should be studied in the original article by one who is interested. The cystine was determined by the Sullivan colorimetric method and they found that normal individuals varied from 10.28 to 13.02 per cent with an average of 11.69 per cent. The arthritics varied from 7.20 to 13.11 with an average of 9.77 per cent. 22 per cent of the arthritics showed below 9 per cent cystine and 57 per cent showed below 10 per cent. The lowest normal gave 10.28 per cent cystine.

Acting on the theory that injurious material react with sulphur was present in the arthritic economy, six cases with low cystine content in the finger nails were given a sulphur therapy in the form of intragluteal and intravenous injections of "sulfur-diasporal." All but one of the six cases gave an increase in nail cystine as a result of the sulphur therapy.

Their deductions are that in the majority of the

arthritic cases the low cystine content of the finger nails seems to imply an intoxication factor which draws on the sulphur complexes as, for example, glutathione, and thus diverts the sulphur from its normal channels which would lead to a finger nail containing at least 11 per cent cystine. The increase of the cystine content of the finger nails of a number of cases of arthritis, after injection of sulphur, implies that the sulphur directly or indirectly, after change by the body, combines with the injurious material and thus spares the normal body sulphur complexes from being diverted.

---

Some other articles of interest contained in the January, 1934, issue of The Journal of Bone and Joint Surgery, Vol. XVI., No. 1, are as follows:

"The Extent of Skeletal Change After Amputation," by T. Wingate Todd, F.R.C.S. and C. C. Barber, M.A., M.D., Cleveland, Ohio.

"Correction of Severe Equinus Deformity," by Leo Mayer, M.D., New York City.

"The Treatment of Fractures and Fracture Dislocations of the Spine," by R. Watson Jones, B.Sc., M. CH. ORTH., F.R.C.S., Liverpool, England.

"Treatment of Fractures of the Upper End of the Humerus," by Nelson J. Howard, M.D. and Leo Eloesser, M.D., San Francisco, Calif.

---

## *DERMATOLOGY, X-RAY AND RADIUM THERAPY*

Edited by William E. Eastland, M.D.
Lain-Roland Clinic, M. A. Bldg, Okla. City

**Granuloma Coccidioides (Further Observations on the Use of Antimony and Potassium Tartrate and the Roentgen Rays in Treatment; Report of an Additional Case). C. C. Tomlinson, M.D., and Paul Bancroft, M.S., Omaha, Journal American Medical Association, Vol. 102, Jan. 6, 1934.**

The purpose of presenting this subject by the authors was that of giving further evidence in support of the use of antimony and potassium combined with roentgen therapy for the treatment of granuloma coccidioides. Although this diease is comparatively rare, the incidence is greater than usually considered.

There are two cases presented in which the above mentioned drug and X-ray treatments were given with very good results. This adds to the sum total of cases treated in this manner. In the discussion that followed the reading of this paper, the use of colloidal copper was mentioned, but it seems to be somewhat inferior to the antimony.

Dr. Howard Morrow of San Francisco brought out the idea that the patient's resistance to the organisms determines a great deal the outcome of the case. Dr. Fred Weidman called attention to at least three different types of organisms causing this disease, and thereby demonstrating a variation in severity depending upon which organism was present.

---

**Irradiation Therapy in Cancer of the Mouth: Technic and Results, G. E. Pfahler, M.D., Sc. D., and J. H. Vastine, M.D., Philadelphia, Radiology, Vol. XXII, No. 1, January, 1934.**

The startling statement that "cancer of the mouth is now curable in the great majority of cases if treated early" heads this article. This is particularly of value in that the senior author of this essay is recognized as one of the leading radiotherapists in this country. A review of 396 unselected cases is made in which the evolutionary stages of treatment are considered, dating back to 1904.

In regard to technic it is mentioned that a heavy filtering of radium is very essential in order that gamma rays of radium can be utilized, thereby allowing a very large dose of raditation without any untoward sequela. The technic involves both radiation from inside the mouth giving from 1500 to 3000 milligram hours, and outside of the mouth in which 30,000 to 60,000 milligram hours are used, covering a period of three or four weeks. The essayists very carefully consider the different locations in the mouth, calling attention to the variations of radiosensitivity of tissues at different locations. It is brought out that the newer conception of technic has improved the five-year cures in unselected cases from 29.3 to 39.2.

Again the fact is emphasized that treatment is necessarily early, as is true in all cancer. In fact, the authors believe that 50 to 75 per cent of mouth cancers can be cured if patients are seen and diagnosed early and then treated by skillful irradiation.

---

**The Roentgen-Ray Treatment of Inoperable Carcinoma of the Breast by the Method of Multiple Converg ing Beams, Eugene T. Leddy, M.D., Rochester, Radiology, Vol. XXII, No. 1, January, 1934.**

Inoperable carcinoma of the breast is a condition that is very common since cancer has been on the increase. Such patients are entitled to any relief that can be given them; hence, the development of a technic of radiotherapy to the best advantage is worthy of considerable research and study as brought out by the author.

Leddy had three different variations in technic which are given in detail in this article, but his final conclusions in this respect show that he regards 135 kilovolts preferable to 200 kilovolts, believing that a reduction in the incidence of pnuemonitis is obtained. This consideration is a moot question as there are other radiotherapists of equal rating who believe the lung tissue is not sufficiently injured to jeopardize reducing the voltage and improvement that would thereby result.

Aside from this technical question, he brings out the idea of multiple small areas of treatments which allow such radiation over a large area that eliminates to a major degree X-ray sickness. Sufficient relief can be obtained that the patient should be afforded an opportunity to choose this method of therapy.

---

**The "Seeds" of Warts, Edward F. Corson, M.D., Philadelphia, The Urologic and Cutaneous Review, February, 1934.**

In a very short article the author brings out an example to facilitate the diagnosis of warts. Commonplace as this condition may seem it is not unusual for many able men to stumble over such a simple thing when the lesion is located on a pressure bearing area, such as the plantar surface of the foot. Instead of the outward proliferation of tissue the pressure causes a lateral and inward extension of the growth.

It is Corson's idea that text books have overlooked one of the most pathognomonic factors in dealing with verrucae. His point is that when a lesion is shaved off superficially there are papillae seen as radiating brown structures which show up clearly against the ground-glass-like appearance of the rest of the foot. He further states that these brown or black-

ish specks may be the real diagnostic features which enable the examiner to differentiate it from a callous or corn.

The author states that the cause of this pigmentation or color has not been satisfactorily explained but is probably due to highly distended blood spaces largely filled by hematogenous hyalin. With such a picture Corson suggests that more accurate differential diagnosis can be made.

## *EYE, EAR, NOSE and THROAT*

Edited by Marvin D. Henley, M.D.
911 Medical Arts Bldg., Tulsa

**Cycloplegia for Diagnosis. Edward Jackson, M.D., Denver. Archives of Ophthalmology, January, 1934.**

In a very thorough and scholarly manner the author reviews the historical literature of cycloplegia and tells why it is a valuable diagnostic adjunct when properly used. Cycloplegics are used therapeutically but their chief use is in diagnosis. As the ciliary muscle and its function of accommodation became better understood it was found that those drugs which dilated the pupil also paralyzed this muscle temporarily. These drugs assumed greater importance with the realization of the part that accommodation plays in modifying and concealing ametropia. Formerly the entire drug was used but now its alkaloid gives us the exact amount required and used to produce the desired result. This is a disabling procedure with an accompanying inconvenience to the patient and the ophthalmologist should understand the action thoroughly so that this shall be reduced to a minimum. We must keep in mind when using these for diagnosis that all cycloplegics are also mydriatics and the difference in ocular refraction between the contracted and dilated pupil. The error of refraction is measured with the eye completely at rest and this is necessary if glasses are to be prescribed which will give the patient the maximum amount of comfort and the minimal exertion for the eyes. The aperature must be taken into consideration. A pupil with a diameter of 4 mm. usually gives a uniform refraction even if regular astigmatism is present. However, when the pupil is fully dilated the outermost part differs in refractive error from that of the central zone. A pupil of twice the diameter mentioned above admits four times as much light, three-fourths of which comes in the peripheral zone. Light passing through the peripheral zone focuses to form an image but not with as much distinctness as that in the central or visual zone. Ordinarily the visual zone is the one which must be refracted correctly to prevent eye strain. If some part of the peripheral zone has a decided, regular astigmatism, the meridians of which do not conform to those of the visual zone then the choice of lenses may be considerably affected. Our postmydriatic test may show a different axis than that obtained during cycloplegia. The linear shadow of regular astigmatism and the revolving triangles of shadow or light due to conical cornea were not very fully explained when first observed with a retinoscope. The proper instillation of a cycloplegic requires as much skill and care as any of the other services the ophthalmologist gives his patient. It should not be dropped on the upper edge of the cornea and allowed to spread over the entire cornea before it is wiped away by the lid or secretions of the conjunctival sac. The portion placed on the conjunctiva is absorbed by the veins into the general circulation and reaches the aqueous humor and the intra-ocular muscles in this fashion. If they are applied in manner proper for diseases of the conjunctiva they will have little effect on the ciliary muscle. An effective method of application is by means of gelatin disks placed above and out from the corneal limbus. Some oculists use atropine in children and homatropine in adults on the theory that accommodation is stronger and harder to overcome in early life. The cross-cylinder as used by Jackson detects and measures changes in astigmatism and so eliminates the necessity of frequent cycloplegia.

**Intracranial Complications Appearing During the Treatment of Ear and Nose Diseases. Dr. Ernest Reeves, Passaic, N. J. The Laryngoscope, December, 1933.**

Intracranial signs and symptoms appearing during the course of treatment of an apparently common infection or after a classical operation on the ear or nose brings warranted alarm not only to the attending physician but to the patient as well. It is a difficult situation and calls for all the facilities of the laboratory of a first class hospital in addition to mature surgical judgment to arrive at a correct differential diagnosis. A mistaken diagnosis of brain abscess may subject the patient to an unnecessary operation with a subsequent infection of the coverings of the brain or of the brain itself. An undiagnosed brain abscess may rupture and cause death by a spread of the infection. Reeves states that a great portion of meningeal complications and one-third of all brain abscesses are caused by sinus thrombosis. Any symptoms which cause us to note sinus complications are valuable in determining the site of operation. Five cases are reported in great detail as to history, physical examination, hematology, spinal canal contents, roentgenograms and other important diagnostic aids such as the Tobey-Ayres test, etc. If an operation was done the findings and the daily progress of the patient are also included. Case one showed a positive Tobey-Ayres test without any visible sinus thrombosis and no definite signs of brain abscess but a brain abscess was discovered at operation. This sequence of events is quite unusual. Case two, having been sent there with a diagnosis of suspected brain abscess, was examined by many competent otologists as well as other medical men in one of the best hospitals in the country, did not show sufficient symptoms to warrant surgical interference at that time and it was almost three months before he came to operation. The interesting point in connection with this case is the long so-called latent period. Case three was one of meningitis in which a radical mastoid was done and all necrotic bone removed including that around the labyrinth which showed signs of necrosis and leaving open with a drain in place. This was a conservative method of treating the meningitis by removing the bony foci of infection. Case four was one of suggested meningitis with a probable brain abscess in which all the symptoms, both local and general, seemed to point to a brain abscess. When a radical mastoid was done and the dura exposed it was found that the cholesteatoma had destroyed all bone. Pressure from the cholesteatoma and meningitis explained all the signs and symptoms found. It is in this type of case that it is difficult to keep from probing and exploring for an abscess when the dura lies exposed. When pathology, other than brain abscess, is found at operation that may possibly explain the symptoms, the author follows the conservative plan and does not enter the brain. He believes in the radical removal of all infected bone but if the dura then looks healthy he awaits developments. The last case is one of acute frontal sinusitis and ethmoiditis with signs of brain abscess such as neck rigidity,

Kernig, one-sided clonus, convulsions and paresis in which there was no brain abscess.

---

**Fulminating Laryngo-Tracheo-Bronchitis. Lyman Richards, M.D., Boston. Annals of Otology, Rhinology and Laryngology, December, 1933.**

The seriousness of fulminating laryngo-tracheobronchitis and the inadequateness of the treatment necessitates a true understanding of the pathognomy so that a correct prognosis may be given. Foreign body, diphtheria and acute infectious laryngitis are the three main conditions which cause upper respiratory obstruction. When the first two have been ruled out and the treatment for spasmodic croup has failed to relieve the obstruction an accurate diagnosis is made only by direct laryngoscopy. In certain milder types, if the crusts are removed and an intubation tube inserted, an open airway is assured but demands constant watching to see that the tube is not coughed up. Many times the patient will refuse liquids with the intubation tube in place and hypodermoclysis and other methods must be resorted to in order to insure a high fluid intake. This treatment at times gives only temporary relief and when not entirely successful if a tracheotomy is done little benefit is received since the crusts have formed in the lower trachea. At this location it is impossible to relieve laryngeal obstruction except by mechanical removal of the crusts with suction or forceps by bronchoscopy. If this fails the patient will die of suffocation. Since repeated bronchoscopies are necessary because of constantly reforming crusts a tracheotomic bronchoscopy is performed with less difficulty to the patient and physician than when done through the larynx. Other laryngologists whose cases are discussed in this article do not approve of intubation because in fulminating tracheobronchitis this treatment alone rarely proves satisfactory since one or more tracheotomies (as high as seventeen in one case) is usually necessary and if the intubation tube remains in place there is great danger of laryngeal ulceration and following stenosis. Tracheotomy is given first choice and should be performed early. Some differ in opinion regarding the type of incision but the incision should always be "low" through the third and fourth tracheal ring. Due to the absolute need of an adequate airway a modified tracheal opening is an advantage and by using the so-called punch tracheotomy of Mosher the introduction of the bronchoscope in numerous bronchoscopies is made easier. The value of a definite solvent is still doubtful but a sodium bicarbonate solution instilled regularly into the tracheal cannula seemed to soften the secretions, adrenalin is recommended by Gittins in like manner and antistreptococcus serum has been tried. If a serum can be found to match the strain of the particular streptococcus in any given case a greater advancement than now seems possible will have been made toward the recovery from this disease. Three case histories are given and the most recent in complete detail. The therapeutic measures in this article were minutely carried out, in the latter case, and the fulminating infection was overcome but the patient "died suddenly from an unknown cause." Throughout this entire paper the author makes it clear that to cope with this disease successfully a correct diagnosis must be made early and drastic measures quickly taken.

**Should Fusospirochetal Infections Be Treated With Arsenicals? David T. Smith, M.D., Durham, N. C. Archives of Otolaryngology, December, 1933.**

Smith believes that this group of anaerobic organisms under certain conditions has a primary pathogenicity and that the infection as a general rule is best treated, locally and constitutionally, with arsenic in some form. Some case reports are given in detail which illustrates his contention. An excellent extensive bibliography which includes many American and European writers is appended. Beneath the tartar in many healthy mouths are found spirochetes, fusiform bacilli, vibrios and cocci but this cannot be used as evidence against their pathogenicity since admitted pathogenic organisms such as pneumococci, meningococci, diphtheria bacilli and hemolytic streptococci are known to live as saprophytes in the mouth and nasopharynx. Some recognized authorities state that most of these fusospirochetal infections will clear up with a simple treatment or no treatment at all and the author replies that so do measles, pertussis, follicular tonsilitis in most cases and even diphtheria in many cases. Most cases of staphylococcic and streptococcic cellulitis following trauma are self limited. Some of the dangerous complications of fusospirochetal infections mentioned are: (1.) Extension into the soft tissues of the neck with the formation of a fatal Ludwig's angina; (2.) fatal hemorrhage after Vincent's angina; (3.) following submucus resection; (4.) extension of the infection into the lungs. These organisms are usually more numerous in the mouths of syphilitic patients while receiving mercury. Inflammation of the gums subsides rapidly and the number of organisms decrease when intravenous arsenicals are given. It is possible for the spirochetes to become arsenic-fast and for an acute Vincent's angina to develop while the patient is receiving intravenous arsenicals. Discontinuation of the arsenicals and giving intravenously antimony and potassium tartrate usually produce a rapid recovery. This preparation is widely used in South America for nonsyphilitic spirochetal infections. An instance ot severe Vincent's angina in a girl, age two, is shown where the child grew progessively worse over a period of five days in spite of local treatment but responded promptly to intramuscular injections of sulpharsphenamine. Improvement was shown in the first twenty-four hours after the initial injection. A man, age thirty-five, with a chronic fusospirochetal infection of the larynx of four months duration cleared up with intravenous neoarsphenamine. A white woman, age thirty-nine, with a chronic trench mouth and a husky voice for the three previous months recovered with intramuscular sulpharsphenamine. Vincent's infection in Avitaminosis in a negress, age twenty-one, was controlled after about seventeen or eighteen days of intravenous medication. In 940 cases of pulmonary abscess collected from American literature in which only general medical care was given, 40% died. Eleven of fifteen cases reported by one man and thirteen of fourteen cases of another writer recovered with arsenical therapy in addition to general medical care. Chronic abscesses of several months duration do not respond so well to this form of treatment but the patient is made a better operative risk. Postoperative pulmonary infections which show fusospirochetal organisms should be treated promptly with intravenous arsenicals. It is emphasized that this is not a harmless procedure as there are at times fatal reactions to the administration of the drug. Repeated small doses at intervals of a few days are the safest and most efficacious.

## SURGERY AND GYNECOLOGY

Abstracts, Reviews and Comments from LeRoy Long Clinic
714 Medical Arts Bldg., Oklahoma City

**Spinal Anesthesia and Neuro-Syphilis (Rachianesthesie et Neuro-Syphilis). Ny Marcel Faure-Beaulieu, Medecin de l'Hopital Saint Antoine, Paris. La Presse Medicale, December 16, 1933.**

In sum, the author takes the position in this article that spinal anesthesia in a syphilitic may hasten, if not cause, the localization of syphilitic lesions in the central nervous system.

As an example he cites the case of a chauffeur 53 years of age who had definite impairment of function of both anal and vesical spincters immediately following a gastro-enterostomy under spinal anesthesia nine years before he sought advice because of a sudden partial aphasia in October, 1933. During the previous nine years there had been a mixture of retention and relative incontinence of urine, and alvine evacuations were had with extreme difficulty. Added to these difficulties, there was the gradual development of a complete sexual impotence.

The author does not undetake to say that this particular patient might not have had neuro-syphilis even before the spinal anesthesia, but he emphasizes the significance of the first evidence of spincter impairment immediately after the spinal anesthesia, and its persistence.

In the discussion, there is reference to the more or less prolonged anesthesia of the legs and retention of urine after the commonly used anesthetic agents have been injected into the subarachnoid space. In the case of the non-syphilitic the evidences of these accidents disappear after a few days or weeks, but he believes that in patients who have latent syphilis these symptoms may persist and be gradually blended with the symptoms and signs of syphilis of the central nervous system.

LeRoy Long.

---

**Two Important Biologic Factors in Fertility and Sterility. (a.) Is There a Safe Period? (b.) Anovulatory Menstruation as a Possible Cause of Sterility. Emil Novak, M.D., Baltimore, Md. Journal of the American Medical Association, February 10, 1934, Volume 102, No. 6.**

Particularly in light of the recent intensive interest in the subject of contraception, the author has carefully considered the subject of whether or not there is a "safe period" during the average menstrual cycle in women. He has reviewed the literature upon the subject and presented the information in favor of such a hypothesis and that against it.

He has summarized certain fundamental considerations, the facts about which have changed considerably in recent years. Firstly, it has been shown that most often ovulation occurs at about the 12th to 14th day, practically always between the 8th day and the 20th day of the cycle, that is from the onset of menstruation. Secondly, the life of the ovum after extrusion from the follicle is now considered to be very short, probably not more than a day or so, some believing only a few hours. This is contrary to the older view that the life span of the ovum was probably about two weeks. Thirdly, the question of the length of time the spermatozoa retain their potency after injection into the vaginal canal is now considered to be only two or three days at most. This, of course, means their capacity to fertilize the ovum. Previously they were considered to retain their potency for many days.

With this outline of the principles governing the precepts of biological birth control, the author has discussed their application and their value.

"Combining the male and female factors, therefore, it would seem that the time at which fertilization can occur is the ovulation phase, plus about three days to allow for the possibility of survival of previously injected spermatozoa, plus perhaps a day or so to allow for the possibility of survival of the ovum."

The author has summarized some of the clinical reports of series of cases in which this principle has been the object of investigation. Most clinical reports have suffered for obvious reasons, such as a lack of precision as to the dates of menstruation and coitus.

He quotes Ogino who states that ovulation occurs from 12 to 16 days before the next menstrual period and that conception is limited to the eight days between the 12th and 19th day before the next period. For the obvious difficulty in the application of this rule in women with cycles other than the common four weekly type, Ogino established a working rule, "The beginning of the eight day 'conception period' he puts at 10 days plus or minus the difference in days between the 28 and the minimal length of the cycle. The end of the dangerous phase he places at 17 days plus or minus the difference between 28 and the maximal length of the cycle."

Knaus, working upon a different test method, states that fertilization always occurs in the period between the 11th and 17th days of the cycle provided it is the usual four weekly type. Both of these writers have clinical reports which bear out their contention.

Novak reports the work of a number of investigators who deny the infallibility of the doctrine laid down by Ogino and Knaus. One of these workers, for example, studied a number of early embryos, and concluded that only 4 of them fell into the period emphasized as the conception phase, that is, the 11th to 17th day. Another holds very strongly that coitus itself may be the determiner of ovulation, as is the case of such animals as the rabbit, in spite of the fact that the usual doctrine is that spontaneous ovulation is the rule in the human female and that it occurs at fairly stated periods.

The most important questionable features of the claims made by those advocating the so-called "safe period" are the following: The statement that conception is absolutely impossible at other times than the "conception period" is certainly open to question, even though this may be the predominant rule. There is still some uncertainty about the length of time that a spermatozoon retains its potency. There also arises the irregularity of the menstural cycle in certain women which produces natural uncertainty. There, again, is the question of as yet inadequate investigation of some of the possible factors in fertilization.

The author sums up that in women with cycles approximating the four weekly type "there is every reason to believe that the immediate post-menstrual period (up to the 8th day of the cycle) and even more the premenstrual period, (after the 20th day) are almost entirely, though perhaps not absolutely, 'safe periods' for those anxious to avoid conception. In women with irregular cycles the problem is more difficult and less certain, probably depending a good deal upon a scheme such as that suggested by Ogino.

Of equal importance these principles apply to the

optimal time for coitus in those desirious of having children. It is that space of time extending from the 10th to the 18th day of the cycle and especially from the 12th to the 14th day. The author then reviews the subject of the possibility of menstruation without ovulation as a cause of sterility, presenting the clinical and laboratory information for and against this hypothesis. The conclusions drawn are vague, as are the therapeutic measures suggested for employment in those cases of sterility where no pathology of any type is found in either the male or the female.

**Comment:** While this article was written for the purpose of discussing the biological birth control method in view of the intensive interest today in the field of birth control, the principles involved and the clinical facts known are of tremendous importance in the study of cases of sterility and the therapeutic assistance that can be given these unfortunate women. It is largely for this reason that the article has been carefully abstracted.

—Wendell Long.

---

**A New Sign of Lumbago (Sur un Nouveau Signe du Lumbago). M. le Prof. G. S. Demianoff, Krasnodar, Russia. La Presse Medicale, November 22, 1933.**

In this article particular attention is given to painful affections of the sacro-lumbalis muscle. (Note: This muscle is intimately blended with the erector spinae which arises from the sacroiliac groove, the lumbo-sacral tendon, the back part of the crest of the ilium and the transverse processes of the sacrum. The erector spinae is continued upward under the name of longissimus dorsi which is attached to the transverse processes of the lumbar and the dorsal vertebrae, and to the 7th, 8th, 9th, 10th and 11th ribs not far from their junction with the spine). The author remarks that the essential function of the sacrolumbalis is to sustain the dorsal spine and to keep it in a straight or normal position. ("la fonction essentielle consiste a soutenir et a redresser l' epine dorsale"). It is reasonable to conclude, therefore, that the sacro-lumbalis muscle ("muscle sacro-lombaire") is visualized by the author as including the erector spinae and its chief component, the longissimus dorsi.

The sign is elicited by two steps or manoeuvres:

1. With the patient in the dorsal position, an attempt is made to flex the extended leg upon the abdomen. If there is lumbago from disease or trauma of the muscular structures (vide supra), flexion is very incomplete, and there is complaint of pain in lower back, due to pull on the sacro-lumbalis by displacement of the posterior pelvis.

2. The pelvis is fixed by pressing heavily with one hand over the anterior superior spinous process of the ilium, while flexion of the extended leg is carried out with the other hand. If the pathology is in the sacrolumbalis and associated muscles the leg can be flexed to practically a right angle with the body without pain in the back because the pull on the muscles has been prevented by fixing the pelvis.

The author insists that this proposed sign must not be confused with Lasegue's sign in sciatica. When an attempt is made to flex the extended leg in saciatica there is incomplete flexion, and pain along the course of the nerve which is stretched (Lasegue's sign). When an attempt is made to flex the extended leg in the presence of disease or trauma of the sacro-lumbalis there is likewise incomplete flexion, but the pain is in the back and is the result of stretching of the muscles. The second manoeuvre proposed by the author leads to a more definite differentiation, except in the occasional case where there is coexistence of pathology of back muscles and pathology of the great sciatic nerve.

**Comments:** The term "lumbago," without qualification, does not convey any definite conception of pathology. At the same time pain in the back, and especially in the lower back, is the chief complaint in the cases of many patients seen by the surgeon. In the investigation of such patients there has been a definite tendency to minimize the complaint if the X-ray negatives of the skeletal structures do not indicate pathology. And yet when one considers the complex and intricate arrangement of muscles, ligaments, tendons, joints, nerves, blood vessels; when one considers potentialities of stress and strain; of blows and twistings and squeezings and contortions—all without X-ray evidence of pathology—one ought to willingly weigh the value of any procedure that might help in the solving of problems too often as baffling as they are important.

—LeRoy Long.

---

**Hypothyroidism—Its Relation to Convalescence Rate and End Result Following Surgery. Henry J. Vanden Berg, M.D., Grand Rapids, Michigan. The American Journal of Surgery, February, 1934, Page 335.**

The surgeon is often asked: "How long will it be after I am operated upon before I am as strong and well as I am going to be?"

Patients with diminished thyroid secretion do not convalesce so rapidly after surgery, other things being normal, as do those who have normal thyroid action. More than that, patients with a so-called high normal thyroid function convalesce rapidly. The author gives case reports which show the effectiveness of the use of thyroid extract in the postoperative management of certain surgical cases. Thyroid administration, when indicated, can be started to advantage almost directly after the operative procedure. It would seem that in elective surgery it might be used to advantage, in given cases, to prepare a patient for the ordeal of the operation.

"No one questions the profound influence of each of the glands of internal secretion and their interrelated action on the body function, and of these, the thyroid gland has been regarded by the author, for a long time, as the master clock of the endocrine system. Its most important function is, perhaps, the generation of the metabolic activity of the body. In other words, the thyroid is in direct charge, as it were, of governing the chemical changes going on continually in living cells, by which the energy is provided for the vital processes and activities. It acts as a continuous charging mechanism. It controls, normalizes, and stimulates the functional processes of all tissues. In fact it is admitted to be the activator of all the body cells—that is, when it functions normally.

At the every beginning of life each organism is charged with an energy potentially sufficient to carry it along for a definitely limited period of time. There is no doubt a considerable variation in the amount of this energy charge in different normal individuals, and the level of this potential force is subject to fluctuation, being elevated, perhaps, through stimulation, or lowered through the influence of extrinsic conditions such as starvation, disease, trauma (operations), and so on. No doubt all of the cells and organs are affected by such conditions, but it seems logical that the cells which are highly specialized in their work, as are those of the thyroid, should be affected to a greater extent and thus exhibit either great-

er stimulation or a reduced function in a correspondingly greater degree. It is well known, for instance, that operation upon any part of the body in the presence of a smouldering thyroid activity may cause an exacerbation of hyperthyroidism in a way and in a degree quite similar to that following operations upon the thyroid itself. Reactions from stimulation such as this do not follow surgery in which the thyroid is normal in its working balance, and surely not if it is subnormal in its action. Quite the contrary, major operations seem to be followed as a rule by a running down of the machinery rather than by an acceleration of it. Whether this running down of the machinery is the result of damage done to the charging mechanism of the body, which seems to be directly under the influence of the thyroid gland, or whether the discharging mechanism under the influence of the adrenal has been speeded up one cannot say with a settled judgment or conviction, but the former is more likely the case.

The degree of hypothyroidism under consideration is, of course, not that of cretinism or myxedema, but what is meant is thyroid secretion that is less than normal. While the surgeon has interested himself very much in the question of **hyperthyroidism,** and has in fact become very keen in the recognition of the early symptoms and signs of it, he has **not** as yet become interested in the so-called masked or occult type of hypothyroidism. He has left the subject to the internist to worry about. The complaint of being tired, of having to drive one's self to his tasks, of lack of "pep," may serve as a hint to suspect underfunctioning of the thyroid, assuming, of course, that constitutional diseases that may cause such complaints have been ruled out. Moreover, patients with this condition have far too often been placed in the neurasthenic group. As a rule those who have a reduced thyroid function have more or less cold intolerance, the skin is inclined to be dry, the appetite may not be up to normal, there may be indefinite joint pain, constipation and headache are common. The history of lack of energy is to be supplemented, of course, with a physical examination, and in some cases the matabolic rate determination may be helpful. If no signs of hyperthyroidism can be elicited it is safe and good practice, if the history is suggestive of an underfunctioning thyroid, to start thyroid feedings under careful checking and observation. For each individual there is a maximum dose which must be found by experiment. The use of desiccated thyroid extract seems to be very effective and practical. The dosage will depend largely upon the degree of deficiency. The metabolic rate estimation will give a rather definite indication of the amount that is needed, yet without it the dosage can be determined from all the clinical data in hand, with enough accuracy for all practical purposes.

The author has demonstrated that in most cases it is well to use 3, 4 even 5 grains daily for two weeks and then to reduce the dosage gradually. In any case the medication must be carefully supervised. In some instances two or three months treatment seems to arouse the thyroid to action so that further administration is not needed. In the majority of cases, however, it has to be given for a number of months, and in some instances it may need be given indefinitely.

He finds that mild hypothyroidism is a very common condition, and its frequency makes it incumbent on the surgeon to have the condition in mind.

In answering the question as to "How long it will be after I am operated on before I am as well as I am going to be?", the author believes that with a lessened function of the thyroid gland a retarded convalescence rate can be anticipated. Also, a very slow convalescence rate may be the trial test, and therefore, the hint that thyroid medication is needed to supply the energy charge that is lacking. This energy charge will not alone be the means of accelerating the convalescence following surgery, but without it the patient's highest health level will never be attained.

—LeRoy D. Long.

---

**Radiation Therapy in Carcinoma of the Corpus Uteri. William P. Healy, M.D., New York, N. Y. American Journal of Obstetrics and Gynecology, Vol. XXVII, January, 1934, No. 1.**

Dr. Healy points out the fact that the greatest number of cases suffering from carcinoma of the uterine body occur in the sixth decade of life. As a consequence, many patients suffer from degenerative lesions associated with advanced age, cardiac and renal disease, arterio-sclerosis, diabetes and obesity. Such lesions occurring in association with carcinoma of the body of the uterus have made it desirable to avoid major surgical procedures if possible.

Though for a long time carcinoma of the uterine body has been considered radio-resistant, because it was a glandular variety of cancer, in these patients who were extremely poor risks for major surgery or in those who declined operation, radio-therapy has been used with benefit and with many apparent cures.

He also recalls the fact that more careful follow up investigations in good hospitals have produced the conviction that hysterectomy alone probably does not give as satisfactory or permanent a cure as we believed.

He reviews the work of Mahle and Ewing in dividing the cases into four different groups or grades according to variation in the histological structure. He recalls Mahle especially recognized the definite relationship existing between histological structure and end result in surgically treated cases. He quotes Mahle, "The postoperative prognosis of a group of patients with adenocarcinoma can be determined by a close study of the cellular differentiation of the carcinoma."

The author then reports 134 patients treated at the Memorial Hospital, dividing them into the four groups, giving a decription of the histological structure in each group, the number treated by radiation, radiation and hysterectomy, or hysterectomy alone, and finally, the result in each group.

Grade 1—Papillary adenoma malignum—entirely papillary and as a rule does not tend to infiltrate the myometrium. Fourteen cases in this group. Radiation alone used in three cases. Seven received intrauterine radium followed in six to ten weeks by hysterectomy. Three patients had hysterectomy followed by X-ray therapy. One received X-ray and radium therapy before and after hysterectomy. All patients are alive and well. It is concluded that one is justified in assuming that this histological type is curable in all cases by adequate radiation therapy or by hysterectomy.

Grade 2—Adenoma malignum—large or giant glands, often greatly elongated, lined by several layers of cuboidal or cylindrical cells—stroma greatly reduced—nuclei of gland cells large, hyperchromatic and stain deeply. Any tendency on the part of the cells to break through into the stroma takes the tumor out of this group and places it in the group of adenocarcinoma.

There were 58 cases in this group. Twenty-seven cases were treated only by radiation. Of these, 74

per cent alive an average duration of life since treatment is 5.3 years. Twenty-one patients were given radiation with intra-uterine radium alone or combined with X-ray, and subsequently in six to ten weeks panhysterectomy by the abdominal route was done. Of these, 90½ per cent have survived for an average of 5 years.

Of the entire group of 58 cases of adenoma malignum, grade 2, 84½ per cent are living from 1 to 15 years since treatment. Dr. Healy points out that those treated with radiation alone who died were either in the advanced stage of cancer or had serious medical complications, and treatment was regarded as only palliative.

Grade 3—Adenocarcinoma—histologically characterized by greater malignancy. The cells are more atypical. There is more evidence of anaplasia and the tumor while still maintaining its glandular arrangement, nevertheless infiltrates the stroma and forms solid masses of tumor cells.

In this group 21 patients received only radiation therapy consisting of intra-uterine radium and external X-ray. Of these, 15 are alive and well for an average of four years. The author points out that in nearly every instance radiation was chosen as the method of therapy because the patient was advanced in years or in disease, and was for these or other reasons regarded as a poor surgical risk.

Fourteen patients with adenocarcinoma received radiation therapy before hysterectomy, and 57 per cent of these patients have remained well for an average of five years.

The increased malignant character of this histological group is indicated clinically by the end result for the entire group of adenocarcinoma of 58.7 per cent, as compared to 84.5 per cent for the grade 2, adenoma malignum.

The author points out that the end results obtained in patients with adenocarcinoma treated by radiation alone were superior to those resulting when hysterectomy was combined with radiation, pointing out the fact that cases in this group treated by radiation alone gave a cure percentage about the same as that received in adenoma malignum group with radiation alone —that is, 71.4 per cent and 74 per cent. He makes the observation that it would be reasonable to assume that radiation therapy is equally effective in controlling the disease in both histological types.

Grade 4—Cellular (anaplastic) adenocarcinoma—characterized histologically by diffuse small round and polyhedral cells often entirely lacking in glandular arrangement. The cells may be closely packed together, stroma scanty, mitotic figures numerous and marked evidence of anaplasia.

In this group there were eight patients. Two of these were treated by intra-uterine radium, both remaining well and free of evidence of recurrence for two and seven years respectively. Three patients treated with radiation before hysterectomy are all alive, but one of them now has clinical and X-ray evidence of chest metastasis.

The author also reports eight cases of adenoacanthoma, a distinct histological variety of corpus cancer. Of these, all are alive except one who died from an undetermined cause two months after hysterectomy.

In summarizing the results of these 134 cases the following points are of interest; There was no mortality associated with either radiation therapy or hysterectomy. The treatment in all of these cases, though representing different plans, is always based upon radiation or hysterectomy, alone or in combination. One hundred per cent of all the grade 1 patients and 87.5 per cent of the grade 2 patients are alive regardless of the plan of treatment followed. In other words, regardless of the treatment, be it radiation or hysterectomy, in these two groups the result will be good. Sixty-three per cent of the patients with adenocarcinoma are alive. The author's conclusions follow: He feels it highly significant that patients with adenocarcinoma of the corpus in which radiation was used in full doses, either alone or some weeks before hysterectomy, have remained free from recurrence or metastatic disease, and have lived longer than those patients with adenocarcinoma of the corpus treated by hysterectomy before radiation, or hysterectomy alone. Because of the tremendous prognostic value of histological grading in this type of cancer, a very early report of the curettage specimen is quite desirable. Dr. Healy concludes that the patient is best treated by instituting full treatment with intra-uterine radium, and if feasible, deep X-ray therapy previous to hysterectomy, delaying operation from four to six weeks following radiation. He also feels that postoperative radiation with the radium applied in capsules in the vaginal tube and X-ray externally should be used from eight to twelve weeks after hysterectomy in cases of adenocarcinoma.

The author then gives a brief description of the technic used at the Memorial Hospital in cases of this kind, which can be read more carefully in the original article if desired.

**Comment:** Dr. Healy is a very capable gynecologist, and has done much valuable work in the field of uterine cancer at the Memorial Hospital. This report is a very valuable one as indicating the utility of radio-therapy in what was considered until not very long ago a radio-resistant type of tumor. It serves, in essential details to corrobrate the former reports from the Radium-Hemmet, in Stockholm, made by Dr. Heyman.

It is to be remembered, however, that the end result in all groups of adenocarcinoma of the uterine body treated by complete panhysterectomy in good hands has yielded a five year cure rate of from 60 to 70 per cent. The combination of pre-operative radiation therapy may prove to be a valuable adjunct, and slightly increase the cure rate of this disease in the operable cases. It is possible for one reading this article to assume a greater importance attached to radiation than Dr. Healy really feels, because by personal communication with him I know that he still feels the hysterectomy is the procedure of choice, but that it is probably better to use pre-operative radiation.

The most valuable part of this work, and that of Heyman in Stockholm, is the proof that in those cases who are too poor a surgical risk or too advanced in the disease to allow surgery, one may use radiation with considerable hope of cure.

—Wendell Long.

---

**Treatment of Operative Shock by Fresh Embryonic Juices (Traitement du Choc Operatoire par les Sucs Embryonnaires Frais). Victor Pauchet, Pierre Rosenthal and Henri Bertreux. La Presse Medicale, Jan. 6, 1934.**

This is a report made at a meeting of the Academy of Sciences, Paris, December 4, 1933. The following notes are based upon an abstract made by J. Couturat:

The employment of embryonic juice as a treatment for surgical shock followed experiments by Rosenthal. Embryonic juice is not used by injection into blood

vessels or tissues, but the active principles are quickly absorbed by way of the mucosa of mouth, nose, vagina and especially the rectum.

Aqueous extracts of the tissues and organs of embryons of any animal are suitable. It is claimed that they contain principles which exert a stimulating and cytogenic influence upon animal cells. The exact mode of action is uncertain. Apparently an incidental phenomenon is the increased output of urine supposedly due to direct action upon the kidneys.

The reporters advise the contents of a 100 c.c. ampoule per rectum each day for two days before operation as a preparatory or prophylactic measure (presumably only in patients where shock is feared) . If there is shock during the operation 100 c.c. per rectum. This repeated every 3, 6 or 12 hours as a curative measure.

The treatment is of interest to the reporters because of its rapidity of action, the simplicity of the mode of administration and its harmlessness. ("En somme, le traitement du choc operatoire par les sucs embryonnaries est interessant par la rapidite de son action, la simplicite de son mode d' administration et son innocuite").

—LeRoy Long.

---

**Treatment of Ankylosing Polyarthritis by Resection or Arthroplasty of Certain Joints (Essai de Traitement par la Resection ou L' Arthroplastie de Certaines Localizations de la Polyarthrite Ankylosante). Rene Leriche and Adolphe Jung, Strasbourg. La Presse Medicale, November 5, 1932.**

The above translation of the title of this article is extremely free, but it is believed that it is a fair indication of the plan of treatment proposed.

It is remarked that while arthroplasty has been employed often in the relief of monoarticular ankylosis with deformity, practically nothing has been done in an operative way to improve or restore function in the case of the unfortunate patient who is the victim of polyarthritis.

The procedure is not advised, of course, in the presence of any acute inflammatory process.

An illustrative case is reported: An unmarried woman of 47 had pain, oedema and redness of toes and fingers at the age of 18, quickly followed by a like involvement of one knee and one temporo-maxillary joint. There was soon deformity of the fingers. The involvement of other joints was progressive. At the age of 26 there was ankylosis of both sterno-clavicular joints, then of the right knee. Later the left knee, and after that one elbow. Through the years, the joints became painful, red, swollen, and when these acute symptoms subsided there was often but not always stiffness. For example, treatment seemed to be of great benefit in connection with the temporo-maxillary joints which had good function when patient was admitted to hospital.

Fortunately the spine had not suffered, nor the hips.

The most trying situation was in connection with the knees. The left knee was ankylosed in extension; the right ankylosed in sharp flexion. The patient was not able to walk.

Radiographs showed soft, irregular and abnormal articular surfaces, with almost complete obliteration of the interarticular space.

An arthroplasty was done on the flexed right knee, a fasia lata graft being placed between the fashioned articular surfaces "en portefeuille." A Kirschner's pin was placed through the inferior part of the tibial epiphysis for traction, and the leg immobilized with the knee in partial flexion. At first there was traction of about five pounds, the next day seven and a half pounds, and a little later around ten pounds. Extension was maintained six weeks, and after that patient was kept in bed three additional weeks.

From the first active movements of the toes were encouraged, and after traction was removed there were active mobilization efforts.

The final result was good extension, voluntary flexion of 80 degrees, some lateral weakness and some difficulty in extending the leg while in a sitting position because of some deficiency of the quadriceps femoris. She was able to stand and walk without pain.

—LeRoy Long.

---

## *BOOK REVIEWS*

**Treatment in General Practice (Second Edition):** By Harry Beckman, M.D., Professor of Pharmacology at Marquette University, School of Medicine, Milwaukee, Wisconsin. Second Edition, Revised and Entirely Reset. 889 pages. Philadelphia and London: W. B. Saunders Company, 1934. Cloth $10.00 net.

Reviewing this book has afforded much pleasure, for the book is well written in the first person and holds one's interest through various convenient classifications of the diseases included within the text. In the preface the author makes it clear that he is acting in the capacity of a careful and sympathetic editor, thus he compiles treatment as found of highest value by well known physicians and also if there is a dissention from those expressed opinions the opposite views are carefully and lucidly set forth, then follows the author's comment from a personal standpoint. It is natural, therefore, that one would expect to see many of the familiar drugs and therapeutic measures again boldly mentioned and still be relieved of the task of reading lists of drugs which have previously been included in so many text books which state that they are of doubtful value but are included in wholesale fashion like unimportant guests at a fashionable gathering, merely as "among those present." The book has not suffered by the shortening of some of the chapters thereby, because it has afforded space in which to mention a dozen or more subjects not included in the first edition. Thus, Acetylsalicylic acid (aspirin) poisoning; agranulocytosis; blackwater fever; hyperinsulinism (hypoglycemia); hypothyroidism without myxedema; serum sensitization and desensitization; simple achlorhydric anemia, and others. A convenient table of vehicles and incompatibilities is also included. The book shows may advantages over a number of volumes on treatment because of the brevity, clarity and literal quotation of statements and reports of authors, thus avoiding a preponderance of bibliography. The book will prove of value to those seeking the best therapeutic measures to employ in a certain case as the best opinions are collected and made readily accessible.